Green Rebuilding the South Bronx: Mapping the Capacity to Promote Sustainable Development in New York City

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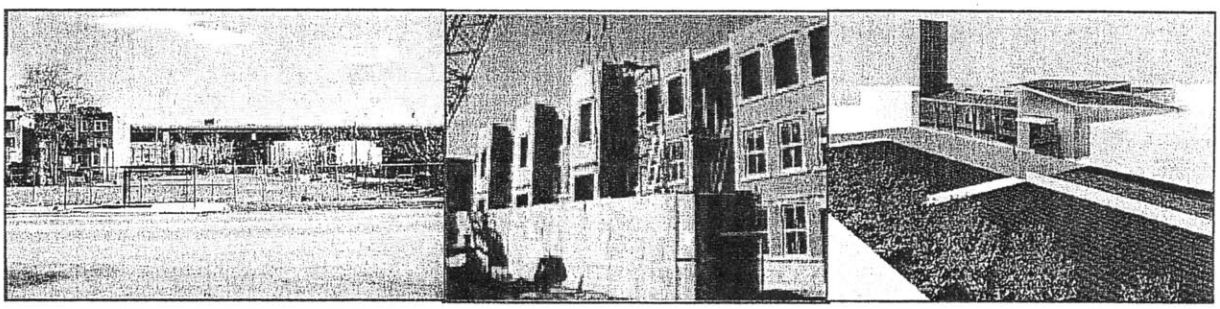

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ABSTRACT

In this thesis I present a map, intended for the short-term, to begin the process of change in development and environmental policy in New York City with the promotion of green building practices. I focus on the low-income minority communities of the South Bronx to ensure all of NYC—even historically marginalized neighborhoods—is part of the journey towards sustainable development.

This green building study of New York suggests the potential of new policies and organizations to further the green building movement. By including and supporting historically disinvested communities like the South Bronx in green building policies and projects, we will have moved beyond the mistakes of past environmental, social and economic policies to ones that integrate the three to create holistic tools to guide our journey.

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This research endeavor has truly been a collaborative process. Over 30 busy professionals took the time to answer questions regarding, of all things, areas of frustration for them. I hope they at least found it cathartic. I especially want to thank Colin Cheney of Earth Pledge, Heather Clarke of NYSERDA, Rich Miller of NYCEDC, and Steven Eber of Keyspan for taking the time to guide and support my research behind answering questions.

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The people of the South Bronx deserve recognition, as well. Thank you for being an inspiration for communities everywhere, keeping hope and visions alive through the toughest of conditions, and proving that community development and environmental health are not opposing goals, but rather supporting ones. Thank you for demonstrating that the environment really is a part of all landscapes, and it is possible to reweave it into the urban fabric. In particular I want to thank Majora Carter and Morgan Powell at Sustainable South Bronx, Paul Lipson at The Point CDC, and Yolanda Garcia and Anna Vincenty at Nos Quedamos for sharing your neighborhood and visions with me. You are leading the South Bronx towards its sustainable future.

CONTENTS

INTRODUCTION

"The destination is important, but the journey is essential." I first heard this phrase at the U.S. Green Building Council's Annual International Green Building Conference November 2002, an event that 4,500 students and professional attended. Darren Bouton of the City of San Jose, California spoke these words in regards to the creation of San Jose's green building rating system and the process to produce it. As I listened to him, surrounded by an enthusiastic and large crowd, I realized that the rating system, or any other green building initiative, is not a destination in and of itself, but rather an emerging driver for the essential journey towards sustainable development.

Sustainable development is a concept with varying definitions, but few concrete examples. One definition describes it as "the use of natural and physical resources in a way that enables people to meet their current needs without compromising the ability of future generations to meet their own needs."[1] This definition, however, like many others, does not explain how to use natural and physical resources to meet these needs, and as a result sustainable development remains as an intangible concept.

While the broad vision of sustainable development seems elusive at best, green building, which embodies the goals of sustainable development, is actually occurring. Green building is a holistic approach to building design and construction that considers how different building systems interact together in order to create healthier, more resource efficient buildings. It also takes into account material use, resource efficiency, and site planning. The advantages of these practices reach each aspect of sustainability and include economic, environmental, and social benefits.

Similarly, green building policies consider the interaction of different organizational systems, both public and private, to effectively enhance the economic, environmental and social sustainability of communities. These

1 New Zealand, Ministry for the Environment, *Resource Management Act,* (Wellington: August 1991).

policies epitomize a new era in environmental policy, one that works towards sustainable development using localized, holistic strategies, which include new collaborations and innovative programs. These policies play a role in the increasing popularity of green building, resulting in the emergence of new programs and developments, which in turn, strengthen the market for environmentally benign building materials and green technologies.

The South Bronx poses as an interesting case study of the emerging green building practice because of its environmentally devastating past and subsequent community-led recovery. Past environmental, social, and economic policies have left their marks on the South Bronx with massive interstate highways, abandoned buildings, numerous public housing developments, and odorous industrial facilities. The environmental burden on the community, according to public health experts and community leaders, has contributed to elevated asthma rates and other health affects. As Alan Hershkowitz, author of *Bronx Ecology,* writes, "When one thinks of the South Bronx...it is the inverse of the sustainable society.[2]" However, grassroots community planning, new partnerships, and groundbreaking programs have led to significant progress. In 1997 the National Civic League named The Bronx an "All America City" and subsequently the South Bronx has become a model for community revitalization. Among these successes are new green developments in the community, including housing developments and civic buildings.

In addition to the compelling story of revitalization, I have a particular interest in the South Bronx due to my work there in the summer of 2002. As an intern for NYC's Department of City Planning (DCP) I saw first-hand both the devastation and the triumphs of the community. Prior to working for DCP, my internship at New Ecology, Inc. and my studies at the Department of Urban Studies and Planning at MIT, allowed me to research the integration of the built and natural environment, sprouting my curiosity in green building. Given this interest, I was

[2] Allen Hershkowitz, *Bronx Ecology*, (Washington: Island Press, 2002) 251.

especially excited to see the construction of Sunflower Way, a green affordable housing development in the Morrisania section of the South Bronx. Within DCP, however, I felt incapable of promoting more green developments. I began to wonder which city agencies or private organizations have the governance and the capacity to do so. In this thesis I answer this question, as well as provide recommendations as to how the Bronx and New York City can build on their current capacities to promote green building and strengthen them.

Through an analysis of the current policies and institutions that are trying to promote green building practices in the South Bronx, I hope to better understand the governing institutions of green building programs and the tools they use to educate, fund, and encourage these practices. Along with initiatives in the South Bronx, my study will detail current city and state green building programs, as well, since they play a significant role in the neighborhood's development. Ultimately, my thesis evaluates both New York City and the South Bronx's capacities to further promote green building by pinpointing the challenges to green building that continue to exist with the current inventory of programs.

Before analyzing the capacity to promote green building, I first define green building and explain its role in moving society towards sustainable development in Chapter 1. I continue with an analysis of green building's increasing recognition and its potential to realize sustainable development in the South Bronx.

To better appreciate the context for sustainable development in the South Bronx, I describe the social, economic, and environmental history of the neighborhood in Chapter 2. I conclude this chapter with the conditions in the South Bronx today as they relate to promoting green building. The green developments that do exist there are a part of the green building activity occurring throughout New York. In Chapters 3 and 4, I detail the specific green building programs and the institutions that govern them in New York State, the City, and The Bronx. Even with the existence of these programs, challenges to promoting green building

persist. Given these barriers, I identify potential areas of improvement and recommend possible programs to overcome them and move towards sustainable development in Chapters 5 and 6.

METHODOLOGY

As stated earlier, the goal of this thesis is to understand and improve the current capacity to promote green building in the South Bronx and New York City. Key observations and conclusions are based on both the literature and interviews. I relied on various books, reports, and articles to review the concepts of environmental justice, industrial ecology, sustainable development, and green building, including Alan Hershkowitz's *Bronx Ecology,* Kraft and Mazmanian's *Toward Sustainable Communities,* and Earth Pledge Foundation's *Sustainable Architecture While Pages. Bronx Accent* and Jonathon Kozol's *Amazing Grace* offered the history and current conditions in the South Bronx. Other helpful books include William Shutkin's *The Land that Could Be,* the U.S. Green Building Council's *Took Kit for State and Local Governments,* and Timothy Beatley's *Green Urbanism.* Reports from the EPA, NYC's Department of Design and Construction (DDC), New York State Energy and Research Development Authority (NYSERDA), and the New York City Partnership (NYCP) along with various articles furthered strengthened my knowledge of the constraints and opportunities of green building in NYC. Websites of various green building organizations, listed in the bibliography, were useful in researching case studies from around the country.

In addition to the literature review, I interviewed approximately 30 "green building proponents" in New York to learn more about specific projects as well as to better understand the existing challenges. These "proponents" have been involved in green building projects through various organizations, including community development corporations, not-for-profit organizations, local government offices, city and state agencies, and private development, consultancy, and architectural firms. Table 5.1 presents a full list of these participants. I asked each one to describe their current green building projects or programs and list the project's partners, funding sources, and policy support. Additionally, I asked them to identify what they believe are the greatest challenges to promoting green building and what, if any, policies or programs would help to mitigate these challenges.

Following the interviews, I analyzed the challenges mentioned by the participants to identify the areas in need of improvement. I consulted green building professionals around the country to see if there are examples of programs that have successfully dealt with similar barriers to green building. Given these examples and the availability of other policy tools, I present a map of recommendations to move the South Bronx and NYC towards a more sustainable future.

CHAPTER 1

INTRODUCTION TO GREEN BUILDING AS AN APPROACH TOWARDS SUSTAINABLE DEVELOPMENT

A Tool in the Sustainable Development Kit

Sustainable development considers the integration of community planning and economic development, individual buildings and watersheds, land use and architecture, and public health and resource efficiency, among other issues. It is an approach to development and policy that attempts to balance economic, environmental, and social needs—for all communities across racial, cultural and economic lines. Achieving the vision of sustainable development requires eventual changes in our political system, economic structure, and societal priorities. In the meantime, it entails careful planning, new collaborations, and innovative policies.

High performance or green building is a tool to help move society towards sustainable development. Similar to sustainable development, green building involves new types of partnerships and programs. Cities and states around the nation are exploring innovative ways to promote green building practices and are laying the foundations for other governments to build on. These pioneering policies, if applied correctly, have the potential to overcome the mistakes of past policies and practices, which were unable to promote economic, social, and environmental goals for all.

The South Bronx, New York neighborhood exhibits the characteristics of the vulnerable communities that past policies, such as the Clean Air Act, Comprehensive Environmental Reclamation Compensation Liability Act (CERCLA), Urban Renewal, and the Federal Housing Authority (FDA), have failed. However, amidst alarmingly high asthma rates, miles of obtrusive highways, and numerous waste disposal facilities, visions of sustainable development are ripe in the South Bronx. With collaborations between federal, state, and local agencies, committed local officials, and grassroots organizations,

green projects are emerging out of the ashes of the once "Burning Bronx," including a 90-unit green multi-family affordable housing development and the Bronx County Criminal Courthouse as well as plans for the Bronx River Boathouse and a green roof addition to a tenement house.

Similar to the holistic approach of green building design, which emphasizes the interactions between different building systems to create a more resource efficient, better performing, and healthier product, these new South Bronx developments exemplify how green building programs involve the collaboration of different government and community systems, both in terms of scale and discipline. The U.S. Department of Energy, New York Department of Environmental Conservation, the New York City Department of Housing and Preservation Development, the New York City Housing Partnership, and the Nos Quedamos/We Stay Community Development Corporation, each played an important role in the realization of Sunflower Way, the green affordable housing development in the Morrisania section of the South Bronx. It is evident that the South Bronx, comprised of a network of government, economic, social, and environmental systems, already possesses some capacity to implement green building projects. However, the question remains whether it has the capacity to build on each success and strengthen its ability to promote green building and move toward sustainable development, or whether these projects are an anomaly in a political and economic structure that will allow the South Bronx to continue to fall through the cracks of ineffectual governmental policies.

Green Building Practices

According to the U.S. Green Building Council, green building, also known as green architecture, sustainable design, and high performance building, is a series of "design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants that address: sustainable site planning, safeguarding water and water efficiency, energy

efficiency, conservation of materials and resources, [and] indoor environmental quality."[3] It is an approach to planning and architecture that takes a holistic and integrated view of building systems and strives to create buildings that are durable yet flexible, people-centered not machine-centered, and healthy and efficient. Steven Winter Associates, a leading energy and architecture consulting firm, explains:

> "A high performance building design is an all-inclusive philosophy. First, there must be a team approach to the design...second, regarding design, the interaction of the whole building structure, its systems, and its context should be considered. This whole building philosophy should include site issues, energy, materials, indoor air quality, indoor environmental quality, and resources, and how they are all interrelated. Third, a high performance building considers how the facility will perform over the long term. The life-cycle maintenance costs, durability, energy usage, and effect on the occupants and the environment must all be analyzed."[4]

As an approach to design and construction, green building does not prescriptively define what a green building is, but rather guides the process to create and maintain it. Therefore, it encompasses various levels of environmental effectiveness. For example, the Adam Joseph Lewis Center for Environmental Studies at Oberlin College, one side of the spectrum, is one of the most advanced green buildings in the nation. The building uses only 63 percent as much energy as standards buildings, employs geothermal heat pumps, maximizes natural ventilation and daylight, and houses an array of solar panels that generates more energy than the building uses.[5] On the other side of the spectrum there exist various energy efficient buildings, such as the Energy Star® developments in the South Bronx. Energy Star® is a national program that promotes energy efficiency for one to four family homes through performance guidelines. These units have tight building envelops, good insulation, and energy efficient appliances to achieve reduced energy consumption. The latter

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3 U.S. Green Building Council, "An Introduction to the U.S. Green Building Council and the LEED™ Green Building Rating System" (December 2002), http://www.usgbc.org/Docs/usgbc_intro.ppt.
4 Michael J. Crosbie and William Jose Higgins, "The Commercial High Performance Buildings Project," *Sustainable Architecture White Pages* (New York: Earth Pledge, 2000) 293.
5 Office of Energy Efficiency and Renewable Energy, US Department of Energy, http://www.nrel.gov/docs/fy03osti/31516.pdf

developments, which still leave a significant ecological footprint, are incremental and important steps on our journey towards sustainable development. On this journey we need to encourage these modest stepping-stones, which work within the constraints of current policy frameworks and economic markets. Furthermore, they are likely to be replicable models from which to learn and grow. Even "light green" developments demonstrate a more sophisticated development process, which understands and works to improve the relationship between buildings, people, and the environment.

Current standard building practices are inefficient and have significant negative impacts on occupants, communities, and the environment, both locally and globally. In terms of resource use, 40 percent of the 7.5 billion raw materials that industry mines from the earth along with 20 percent of the wood that lumber companies extract annually are inputs for construction and the production of building materials.[6] Additionally, buildings consume 40 percent of the world's energy consumption, use two-thirds of its electricity, and produce 40 percent of the sulfur dioxide and nitrogen oxides that cause acid rain. To meet energy needs, conventional buildings tend to rely on the combustion of fossil fuels, which emits greenhouse gases into the air and contributes to global warming.

Besides polluting outdoor air, conventional buildings contain many toxic materials, such as polyvinyl chloride, hydro-chlorofluorocarbons, and volatile organic compounds (VOCs) in solvent-based finishers, adhesives, carpeting, and particleboard. These materials off-gas during use, releasing fumes into the air. The fumes play a major role in creating "sick building syndrome." According to the World Health Organization, at least 20 percent of white-collar workers in the U.S. experience sick building or related syndromes caused by VOCs, combustion gases, carbon dioxide levels, mildew, mold, and tobacco smoke.[7]

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[6] Wendy Talarico, "Taking the Elective out of Environmental Education," *Sustainable Architecture White Pages* (New York: Earth Pledge, 2000) 202.
[7] Michelle, Conlin, "Is Your Office Killing You?" *Business Week* (June 5, 2000).

Acres of dark-colored rooftops and miles of pavement further degrade air quality and impact public health. These surfaces absorb heat from the sun and then slowly release it back into the environment. This process raises the temperature, resulting in a tendency of urban areas to be warmer than outlying rural ones by as much as ten degrees in the summer. This temperature increase aggravates smog, a major cause of degraded air quality and related illnesses like asthma. It also increases the need to cool buildings, thereby increasing energy consumption.

Green building offers a better, smarter way to develop that mitigates or eliminates building impacts. The benefits affect the environmental, economic, and social sustainability of neighborhoods. Green building, with its energy and material efficient strategies, decreases greenhouse gas and other emissions into the air, not just during construction and operation of the buildings, but throughout the lifecycle; protects vulnerable, limited natural resources and habitats; and lessens the burden on landfills. Green building can contribute to the protection and conservation of water resources, as well. Such strategies include the installation of water efficient toilets, faucets, and showerheads, recycling of gray-water for irrigation and toilet flushing, and the use of vegetation and porous pavement to allow rainwater to percolate into the ground instead of burdening over-stressed sewer systems and eventually polluting waterways.

Along with the environmental benefits, green building can be economical. Better insulation, properly sized mechanical equipment, and the use of natural daylight and ventilation have the potential to lower annual energy costs. Recycled and recyclable materials can reduce capital costs on the front end and reduce disposal costs on the back end. Durable and flexible design, plus a well-integrated construction will lead to lower long-term maintenance costs. With plenty of natural daylight, proper ventilation, and healthy indoor air quality, green building may help improve worker productivity and reduce absenteeism. A group study of the Heschong Mahone Elementary School in 1999 found that in classrooms with good daylighting and ventilation, students were learning at faster

rates, math scores increased by 20 percent, English scores improved by 25 percent, and attendance and job satisfaction increased.[8] According to David Gottfried in *The Economics of Green Building*, only two percent of building costs occur during the construction phase of buildings, while six percent goes towards operations and maintenance and 92 percent goes toward payrolls, therefore higher employee productivity is an important consideration.[9] A comfortable work environment can also help attract employees.

The benefits to the community are numerous, as well. Building occupants, including residents, employees, and visitors, enjoy a healthier interior environment. The building and its occupants are "better neighbors," emitting less pollution, using less resources, producing less waste, recycling materials, and reducing contribution to storm-water runoff. The buildings are contextual and beautiful, as well.

Through better understanding of natural systems, advances in technology, and reductions in costs, green building strategies have become increasingly feasible in recent years. As this study will show, these advances alone are not enough to make green building practices commonplace. There is still a lack of knowledge about green building and perceptions of its costs, risk, and complexities deem it a less attractive option for most developers.

The Movement

New tools, including green building guidelines, policies, financial incentives, and existing models, attempt to address the lack of knowledge and the misperceptions around green building. The emergence of these tools nationwide over the past few years as well as industry leaders have driven the momentum of

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[8] Doug Sacra, "Selling Green Development to the Unconverted: Strategies and Incentives," Presentation at New Ecology, Inc.'s 3rd Annual Sustainable Development Forum: A Closer Examination of the Issues (September 23, 2002).

[9] David Gottfried, "The Economics of Green Buildings," *Sustainable Building Technical Manual: Green Building Design, Construction and Operation.* (Annapolis Junction, MD: Public Technology, Inc., 1996).

the still nascent green building movement. As more individuals and communities become familiar with green building, it is possible that they too will join the cause to mainstream green building practices in order to ultimately attain more resource efficient, cleaner, and healthier communities.

A movement is the mobilization and organization of large numbers of people to pursue a common cause.[10] It usually refers to broad-based, grassroots activities and not to top-down policies. Although the green building movement today may not fit neatly into social movement definitions, it is impossible to ignore the energy and momentum around it the past few years. Right now the green building is more of a "hybrid movement," one that is actually driven by business interests—specifically architects and engineers—and government employees.[11] While promoting green building is not based on the grassroots activities that define most social movements, the opportunity exists for greater participation on that level with the population's growing awareness of the concept and its benefits.

The importance of a grassroots green building movement is great. Similar to the environmental justice movement described later in this chapter, green building offers the potential to merge social justice and environmental interests. Both assume, "people are an integral part of what should be understood as the environment."[12] An increasing number of people are coming together and creating programs to educate society on environmental justice issues, as others are beginning to do for green building. Environmental justice advocates are also informing government and industry, "Attention to the social and ecological sustainability of cities is the key environmental issue of the [twenty-first] century,"[13] and therefore they cannot afford to ignore the social and environmental impacts of their activities. A greater public understanding of green

[10] Gary C. Bryner, *Gaia's Wager: Environmental Movements and the Challenge of Sustainability* (New York: Rownan & Littlefield Publishers, Inc, 1999) 13.
[11] Rob Watson, Director of International Programs, Natural Resource Defense Council, phone interview, 22 Mar. 2003.
[12] Giovanna Di Chiro, "Nature as Community: The Convergence of Environment and Social Justice," *Uncommon Ground,* ed. William Cronon (New York: WW Norton & Associates, 1995) 315.
[13] Di Chiro 315.

building can be a community tool both to work with, as opposed to against, development and to ensure neighborhoods' social, environmental, and economic health. This grassroots movement would be an enormous leap towards sustainable development.

While grassroots green building advocacy has yet to be realized, industry professionals and government agencies continue to drive the movement. Two non-profit organizations in particular, the Center for Maximum Potential Building Systems and the Rocky Mountain Institute, are staffed with building and business professionals who work with city governments and large corporations to bring green building into the spotlight. These organizations have played a significant role initiating the movement's momentum in the United States.[14]

Although populations have built in harmony with nature since humans first occupied the earth, much of building construction the past two centuries has concentrated on machinery, profits, size, and speed. There are two instances in recent U.S. history where a handful of Americans paid more attention to either the social or environmental impacts of buildings, but they were short-lived and narrowly focused. In the late nineteenth century, urban reformers such as Jane Addams and Alice Hamilton advocated to increase the ventilation and exposure to daylight to improve tenement living conditions and public health. Almost 100 years later in the 1970s, Americans briefly embraced energy efficient buildings to reduce fossil fuel use in light of the energy crisis at that time. Emerging with the growing awareness of sustainable development, there is now a stronger consideration of the impacts of development on nature and humans.[15] "After 11,000 years of building to protect ourselves from the environment, the delicate environment must now be protected from us."[16]

The beginning of a new era in building design began in 1989 when Pliny Frisk and Gail Vittori of the Center for Maximum Potential Building Systems partnered

[14] Europe has a longer history of green building designs and sustainable urban development.
[15] While humans are a part of nature, I mentioned both separately to put emphasis that protecting the natural, pristine environment is not the only goal of green building.
16 Talarico 201.

with the City of Austin and founded the Austin Green Builder Program, "the first municipal program of its kind in the world."[17] The Green Builder Program brought green building to the public policy level. Other cities were soon to follow including Portland, Oregon and Seattle, Washington. Pennsylvania, New Jersey, and New York have been leading the nation on the state-level with their own programs.

While the public sector began to realize the importance of green building, the Rocky Mountain Institute (RMI) implemented its notion of "Natural Capitalism" into practice by launching Green Development Services over a decade ago. With Green Development Services, RMI helped high-profile clients to implement green building strategies to new and existing buildings including the White House, Four Times Square, and the Sydney 2000 Olympic Village.[18] RMI's ability to integrate business interests with ecological goals continues to persuade large corporations to join, if not lead, the movement. In their words: "RMI is now preparing to lead this next revolution, facilitating the integration of biology, engineering, and architecture into a whole-systems program for making fundamentally better buildings."

Architects play a crucial role in the movement, as well. William McDonough, architect and professor at the University of Virginia, helped large corporations such as the GAP and Ford green their facilities. He has written books with his business partner Michael Braungart on eco-effectiveness and has traveled around the country spreading the word about green building. At the American Institute of Architects (AIA) 2000 Convention in Philadelphia, AIA members overwhelmingly approved a resolution to "acknowledge sustainable design as the basis of quality design and responsible practice for AIA architects, and therefore, to integrate sustainable design into AIA practices and procedures."[19] As an active component of the green building movement, AIA hosts biannual conferences on

[17] Pliny Fisk III, "Advanced Green Building," *Sustainable Architecture White Pages*, (New York: Earth Pledge, 2000) 268.
[18] Rocky Mountain Institute Brochure, "Natural Capitalism Practice: Green Development."
[19] Sara Malone, "The AIA's Sustainability Resolution," *Sustainable Architecture White Pages*, (New York: Earth Pledge, 2000) 299.

sustainability, participates in charrettes, and presents its annual Earth Day Top 10 list of green architecture.

Various green building guidelines, standards, rating systems, and developments had previously existed worldwide due to Europe's more progressive and mature green building movement.[20] However, it was the work of the US Green Building Council (USGBC), an organization of product manufacturers, environmental leaders, building and design professionals, building owners, financial industry leaders, and government agencies, that set the movement into full gear in North America. The USGBC created the Leadership in Energy and Environmental Design (LEED™) building rating system in the spring of 2001. With a possible 69 points, LEED™ rates a building based on various site planning, energy efficiency, water efficiency, material use, and indoor air quality standards and awards a building a certified, silver, gold, or platinum rating depending on the total standards it meets. Its core mission, according to the USGBC is to "encourage and accelerate global adoption of sustainable green building practices through the development and implementation of universally understood and accepted standards, tools and performance criteria."[21] That is exactly what it is doing. Many institutions, municipalities and states rely on the LEED™ rating system as their policy standards. Cities, such as Portland, Seattle, and San Jose, California use customized version of LEED™ to guide their cities new development projects. Similarly, the Massachusetts Institute of Technology has adopted a LEED™ Silver Plus policy for all new construction. Through the release of newer versions, LEED™ and the USGBC continue to evolve and expand with the maturation of the movement.

A New Approach to Policy

[20] The leading international green building standard is the BRE's Environmental Assessment Method (BREEAM). BRE, a leading consultancy in England, established BREEAM in the early 1990s, http://products.bre.co.uk/breeam/default.htm.
[21] U.S. Green Building Council, *State and Local Government Tool Kit*, (Washington, DC: USGBC, November 2002) 21.

In its environmental, social and economic objectives, green building programs, such as the LEED™ based policies, are part of what Kraft and Mazmanian call the third epoch of environmental policy, the pursuit of sustainable development.

> "Whereas first-generation environmental problems primarily involved direct regulation of air, water, and soil pollution from major sources such as factories and power plants, and second-generation issues required broader, more flexible and cost-effective methods to control smaller generators and other sources of widely dispersed contamination, third-generation problems (such as climate change) are often global in scope and require more comprehensive and integrated approaches to get at the roots of human behavior that threaten the stability of ecosystems for future generations."[22]

Prior to the 1970s, most environmental policies involved land conservation and land trusts. Kraft and Mazmanian's "first epoch" describes the pollution control environmental policies that began to roll out of the federal government in 1969, including the Clean Air Act, Clean Water Act, Federal Environmental Pesticides Control Act, Marine Protection Act, Coastal Zone Management, Endangered Species Protection Act, Safe Drinking Water Act, Toxic Substances Control Act, and the Resource Conservation and Recovery Act of 1976. These policies were media specific. In other words, they viewed each media, water, air, and land, separately, without any relation to the others. They also tended to focus on pollution control, as opposed to prevention, and are therefore called end-of-pipe legislation. Today, we refer to these policies as command-and-control since the law stated, or commanded, a level of pollution that the industry could not exceed, and if it did exceed that amount; the government could fine the company. The policies of the 1970s did not take into account the cost of application, administration, and enforcement, nor did they address non-point source polluters.

During the "second epoch," policies began to consider the economic side of the equation with voluntary and flexible programs, such as tradable pollution permits.

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[22] Norman J. Vig and Michael E. Kraft "Toward Sustainable Development?" *Environmental Policy: New Directions for the Twenty-First Century,* Fifth Edition (Washington, DC: Congressional Quarterly Press, 2003) 392.

These policies continued to treat each pollutant and media separately, and they did not consider the distribution of the permitted pollution.

After thirty years of environmental policy, many environmental problems still exist, plus a host of others, according to Mazmanian and Kraft. The previous two environmental eras failed to deal with non-point source pollution, such as emissions from automobiles and buildings, the evidence of climate change, the continuing loss of biodiversity, wetland protection, the growing suburban sprawl, and the fact that a disproportionate amount of environmental risk occurred around minority and low-income communities giving rise to environmental justice concerns. Forty percent of all freshwater bodies still fail to meet the "fishable and swimmable" goal of the Clean Water Act, hazardous and nuclear wastes remain a challenge, and the nine warmest years since the weather tracking began, have occurred since 1990. Plus, the country now must deal with global environmental issues, such as population growth, transboundary pollution, preservation of ocean fisheries, international hazardous waste shipment, export and use of agricultural pesticides and chemicals; and many issues relating to nuclear fuel reprocessing, destruction of nuclear weapons, and weapons proliferation.[23]

The "third epoch" introduces new approaches to environmental protection that attempt to address many of the remaining environmental issues. This new era endeavors to take into account economic and social sustainability and includes pollution prevention initiatives, the precautionary principle, market incentives, place-based local programs, and collaborative planning. It also consists of public/private as well as intergovernmental partnerships. It considers new ideas, such as environmental justice, industrial ecology, and community participation. These are not just environmental policies; they are economic and social policies, as well, which include housing, transportation, and welfare. Green building, as part of this trend, encompasses these new approaches and principles.

[23] Vig and Kraft 397.

Case for Green Building in the South Bronx

As we continue to define this new era of sustainable development policies, it is important to ensure that vulnerable communities, such as those in the South Bronx whose residents are primarily lower-income and minority, receive more policy support than they did during the past eras. These neighborhoods are also known as environmental justice communities—ones that are "disproportionately and adversely affected by environmental and health impacts of public and private actions and policies."[24] A South Bronx newspaper, *The Inner Press*, explains,

> "Until recently, environmentalism was conceived primarily as protecting forests and beaches and species of animals about to be hunted or poisoned into extinction. We support all these causes, but, as asthma and cancers and yet-to-be-named diseases continue to increase in our communities, environmentalism becomes less abstract, more immediate, and more necessary."[25]

The South Bronx contains three dozen, or 45 percent, of the City's waste facilities, yet comprises only 6.5 percent of the population. "[It] is a crossroads for nearly all the City's produce, more than half of the city's putrescible garbage, nearly all the City's sewage sludge and as many as two million truck trips a year."[26] Public health experts argue that these facilities are partly responsible for the devastating health statistics of the South Bronx. Rates of death from asthma are about three times higher in the Bronx than the national average. Hospitalization rates are about five times higher. The Hunts Point section of the South Bronx has the word's third highest asthma rates and the nation's second with one out of every three residents suffering from it.[27]

"Often, the combination of being poor and of color in our society can lead people to believe that they are powerless and voiceless," explains Majora Carter,

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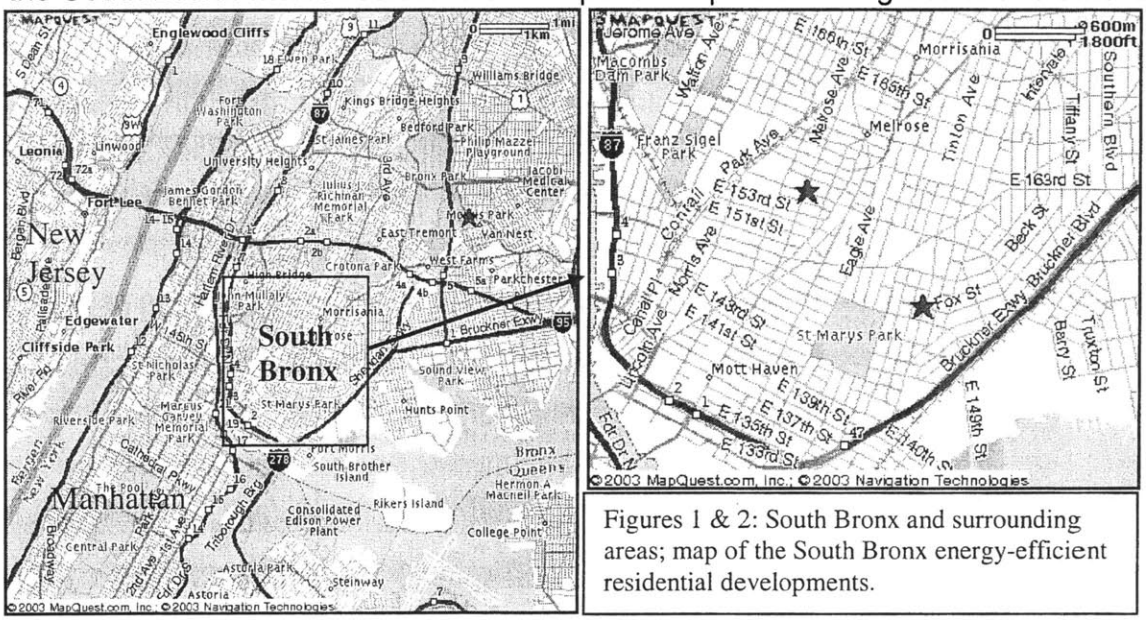
[24] The New York City Environmental Justice Alliance, http://www.nyceja.org/membership
[25] Inner City Press. "Environmental Justice", http://www.innercitypress.org/ej.html.
[26] McGowan, Kathleen, "Breathing Lessons," *City Limits New York's Urban Affairs News Magazine* (May 1999.)
[27] Gideon Land. "Taking A.C.T.I.O.N. on the Web" *Hunts Point Alive*. February/March 2003.

founder of Sustainable South Bronx.[28] Green building can be a strategy for communities to confront their historical disenfranchisement and contribute to rehabilitation and development plans in their communities. The green building movement has the potential to include environmental justice and all other communities on the journey towards environmental, social and economic sustainability with the implementation of the green building approaches and principles mentioned in the previous section.

In addition to community empowerment, South Bronx residents have much to gain from green building practices. Green roofs and vegetation can help mitigate offensive odor and noise pollution from surrounding industry. This will also help lessen contaminated stormwater runoff into the Bronx and Harlem Rivers. For tenants of green buildings, there is the possibility of lower utility bills and maintenance costs. In standard affordable housing units nationwide, energy bills can be as high as 26 percent of the household's income.[29] Energy efficient buildings can reduce this burden by 30 percent.[30] This is especially important in the South Bronx where residents encompass the poorest congressional district in



Figures 1 & 2: South Bronx and surrounding areas; map of the South Bronx energy-efficient residential developments.

[28] Majora Carter, "Balancing Development and the Environment in the South Bronx." *Gotham Gazette*
[29] United States Environmental Protection Agency, "Climate Change Solutions: Vermont Trims Energy Bills for Low-Income Families" (September 1998) 1.
[30] United States Department of Energy, Energy Efficiency and Renewable Energy, Presentation: "Future of Residential Green Building: Fannie Mae's Perspective" (April 2001) 14, http://www.eere.energy.gov/buildings/building_america/pdfs/db/30957.pdf.

the nation[31]. Additionally, green buildings can improve indoor air quality and increase exposure to natural light, potentially having a positive affect on health, mood, and productivity.

The benefits may be more than a distant dream for some residents as the green building movement begins to show signs of arrival in the South Bronx. The Borough President recently cut the ribbon on a 90-unit green residential development, the first residential development to receive the Energy Star® Award for Energy Efficiency. Another development is under construction around the corner. A few blocks away in Mott Haven, Habitat for Humanity broke ground for thirteen new energy efficient homes in March 2003. There are plans for a green environmental center and educational boathouse along the Bronx River. Construction continues on a green courthouse and ideas of a green roof retrofit on a tenement house capture the imagination of community organizers. The application of green building here can become a national model of how community organization and empowerment around green design can lead to more sustainable development.

It is possible to expand opportunities for more green building developments in the South Bronx. According to Paul Lipson, cofounder and director of The Point Community Development Corporation, "Green building makes sense in the South Bronx. We have plenty of open land in the form of large, vacant lots and the cheaper land prices here make it a great climate for green building experimentation." The growth in population and economic development over the past decade, as I will discuss in the next chapter, also provide opportunity to engage the community in green building developments.

[31] Bronx Data Center, Lehman College, City of New York, "Socio Economic Benchmarks from SF3: The Bronx and Other NYC Boroughs," *Discovering The Bronx: Using Census Data To Highlight Social Problems And Achievements In A Major Urban Area With 2000 Socio-Economic Data* http://www.lehman.cuny.edu/depts/polisci/discover/benchmk2.htm

Chapter 2

The Social, Economic, and Environmental History of the South Bronx

"When one thinks of the South Bronx, pastoral shades of green are not the first thing to come to mind. It is more common to think in shades of brown."[32] However, the South Bronx was once green wilderness, with healthy waterways and diverse vegetation. Urbanization, industrialization, and public projects contributed to South Bronx's transformation to a paved, polluted, and partially abandoned landscape. As the community rebuilds, the built and natural environment will continue to change. Green building may be one way to ensure the health of both environments and the residents who live there.

The Bronx has a history of immigration and change. The northernmost borough of NYC, with a land area of 42 square miles, currently has a population of 1.33 million people.[33] The waterways surrounding and crossing through much of the borough, including the Bronx River, Harlem River, Westchester Creek, and Upper East River and Western Long Island Sound, have had significant influence on the development of the borough. Rivers are not the only things traversing the borough and affecting its development; its bridges, highways, and railroads create both opportunities and constraints for its economy, environment, and communities. These infrastructures were more heavily traveled in 1990 than those of any other part of the United States.[34]

The infrastructure, development, and social changes have been most dramatic in the South Bronx. Of The Bronx's twelve Community Boards, one through four and part of nine

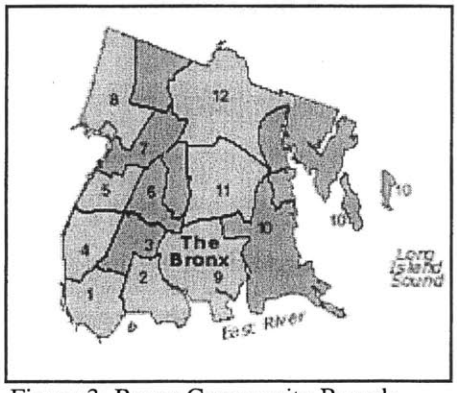


Figure 3: Bronx Community Boards, CBs 1-4 & 9 comprise the South Bronx

[32] Carter 1.
[33] Bronx Borough President's Office, "Bronx County Comprehensive Economic Development Strategy 2002," (2002) 2.
[34] Gary Hermalyn and Lloyd Ultan, "One Hundred Years of the Bronx," Bronx Historical Society, http://www.bronxhistoricalsociety.org/index64.html.

comprise the South Bronx. According to the U.S. Census Bureau, the population of the South Bronx is 522,412, which is 40 percent of the borough's total population and 6.5 percent of the City's. As of the 2000 Census, The South Bronx is 39 percent Hispanic and 60 percent Black residents. The demographics of the neighborhood continue to shift as they have throughout its history, with the influx of immigrants and the lure of its assets.

Early Development of the South Bronx

The Native American Mohegan tribe once moved across the pristine wilderness of what is now The Bronx. Henry Hudson "discovered" the area in 1609 and Swedish-born Jonas Bronck became the first European settler in 1639 in what was then the Dutch colony of New Netherland.[35] Bronck purchased 500 acres from the Mohegans and began to build mills along the Bronx River, named after Bronck. There were twelve mills lining the river by the mid-1700s, but most of the area remained thickly forested.

The Bronx's political history began in 1696 when the colonial governor of New York granted the rural Westchester area a charter making it a borough and allowing it to have a mayor, council, and alderman. By that time, the English had conquered the colony and renamed it New York. The area of what is now the Bronx became the southern portion of Westchester County. During the British rule, landowners held most of the land in large manors, which enslaved laborers and tenant farmers worked. These landowners, including the Morris, Fordham, Philipse, Pell and Van Cortland families, were the ruling aristocracy of the Bronx, and their names can still be found in the parks, streets, and neighborhoods.

Upon America's independence from the British, some of these estates were divided into smaller farms. The harvests these farms provided served the fast growing market of New York City.[36] Other industries began to grown, as well.

[35] Lloyd Ultan and Barbara Unger, *Bronx Accent: A Literary and Pictorial History of the Borough*, (New Brunswick, NJ: Rutgers University Press, 2000), 5.
[36] Ultan and Unger 20.

The construction of the Harlem Bridge in 1797, connecting Manhattan to The Bronx and places north, secured the importance of The Bronx for the region and the nation.[37]

In the early part of the nineteenth century, The Bronx remained a "rural arcadia,"[38] however not for long. The Bronx River was so pristine during the 1820s and 1830s that the New York City Board of Alderman wanted to use it to supply drinking water to the growing city. Land use and environmental health began to change with the construction of new roads and the New York Central Railroad in the 1840s. The streets and railroads provided great opportunities for industrial growth. An industrial corridor emerged along the railroad, which, according to the Bronx River Alliance, initiated the environmental degradation of the Bronx. By the end of the century, the recently pristine Bronx River was "degenerated into what one official commissioner called an 'open sewer.'"[39]

The roads and railroad also attracted new residential developments. The population almost doubled between 1800 and 1830 to over 3000. Employment opportunities in the new industries and construction projects attracted thousands of immigrants escaping the severe famine in Ireland and a failed revolution in Germany.[40] Many of the German immigrants settled in the South Bronx neighborhoods of Melrose and Morrisania where they opened shops, breweries, and saloons.

A Borough of Communities, Parks, and Transit

Growth continued and expanded west with the New York and Harlem River Railroad in 1841, the Third Avenue El (Elevated Train) in 1886, and the introduction of electricity into The Bronx in 1887.[41] The expansion of the 3rd Avenue El to 132nd Street in 1888 precipitated the most rapid increase in

[37] Hermalyn and Ultan. Note: the Harlem Bridge is now the Third Street Bridge, which turns into Boston Post Road.
[38] Ultan and Unger 21.
[39] Bronx River Alliance, "Natural and Social History," http://www.bronxriver.org/theRiver.cfm.
[40] Hermalyn and Ultan.
[41] Hermalyn and Ultan.

population to date. The railroads provided great opportunities for residential growth, and consequently, new commuter villages formed around their stations. Wealthy industrialists took advantage of the bucolic surroundings of the Bronx and built mansions in what is now Hunts Point.

As waves of European immigrants began to crowd Manhattan, city politicians looked to the mostly rural Bronx to expand and provide parkland for its residents. New York City annexed the land west of the Bronx River in 1874 and to the East in 1895. Soon after, the City established Pelham Bay, Crotona, St. Mary's, Claremont, Van Cortlandt, and Bronx Parks. In 1898, the borough, now officially called The Bronx, became a part of New York City and therefore acquired political status similar to the other four boroughs.

Tremendous change occurred into the twentieth century, with the extension of the IRT subway into The Bronx in 1904. Paved streets and "an urban landscape dominated by apartment houses,"[42] began to further transform the agricultural and suburban environment as Irish and German families continued to flock to the borough. The 3rd Avenue elevated line was extended and provided a rapid transit line from Manhattan to the Bronx that had connections to the existing trolley lines. Undeveloped land along the elevated was soon full of apartment and commercial buildings all the way north to Gun Hill Road. In 1914, the Bronx became New York State's 62nd and final county.

By 1925, over one million people lived in the Bronx, mostly comprised of first- and second-generation Irish, Italian, and Eastern European Jewish immigrants pursing a better quality of life. The Bronx still offered "Parks, tree-lined boulevards, and open land [which] provided fresh air and greenery considered essential to raising families,"[43] plus the modern conveniences of telephones, central heating, gas, electricity, refrigerators, and kitchen ranges. The characteristics of the neighborhood now included grocery stores, restaurants, vegetable and fruit markets, tailors, hardware stores, department stores and

[42] Ultan and Unger 46.
[43] Ultan and Unger *69.*

boutiques.[44] The main commercial districts were "The Hub" at 149th Street and 3rd Avenue and the intersection of Fordham Road and the Grand Concourse. Residents shopped at the districts' large department stores and frequented the movie palaces and vaudeville theaters. In 1923, baseball games became a Bronx activity as the Yankees officially became the "Bronx Bombers" with the construction of their new stadium on 161st Street.

In 1929 the stock market collapsed, but construction of new projects continued in part due to the connection of the Bronx's Democratic boss, Edward J. Flynn, and his close ties with Franklin D. Roosevelt. During the depression there were improvements to parks and school and the construction of Bronx Central Post Office and the County Jail. However, the majority of these public works were geared to serve the automobile, such as the Triborough, Henry Hudson, and Bronx-Whitestone Bridges. The auto-centered trend continued during the period following World War II with the Major Deegan, Cross Bronx, and Bruckner Expressways as well as the Throg's Neck Bridge.

White Flight, Sprawl, and Robert Moses

The Postwar era saw the beginning of a different kind of change in the borough, especially in the South Bronx, spurred on by federal transportation and housing policies, the authority of Robert Moses, and the chase of the "American Dream"

> "The American Dream for young adults was to get married, have children, buy a car, and move to the suburbs. Like their parents who moved up from the Lower East Side to The Bronx, the post-war generation left the borough. Even those who wanted to stay faced a housing shortage that forced them into other parts of the city and suburbs."[45]

Similar to older, urban, American cities, the automobile had a devastating affect on the stability of The Bronx. An increasing number of people owned cars, and the new highways allowed them to travel from the city to the suburbs where they

[44] Hermalyn and Ultan.
[45] Ultan and Unger 158.

could purchase homes more easily with new federal housing programs through the Federal Housing Administration and the Veterans Administration.

The new highways not only made access to the suburbs easier, it helped to destroy stable, middle-class neighborhoods that existed. Many historians credit or blame Robert Moses, creator and head of several New York authorities, for the massive highway construction. During the 1950s and 1960s, these highways cut right through neighborhoods of dense apartment houses, transforming nice neighborhoods into "sublime, spectacular ruins."[46] The Cross-Bronx Expressway, for example, "blasted directly through a dozen solid, settled, densely populated neighborhoods...that something like 60,000 working- and lower-middle-class people, mostly Jews, but with Italians, Irish and Blacks thrown in, [who] would be thrown out of their homes."[47]

> "During the era of Robert Moses, the Bronx fell into a period of urban decay. The quality of life, particularly in the South Bronx decreased dramatically. Neighborhoods were fragmented by the construction of numerous highways. In particular, the construction of the Sheridan and Cross-Bronx Expressways further distanced the Bronx River communities from each other and from the River itself."[48]

In addition to the highways, Moses and the New York City Housing Authority built new high-rise, low-income housing developments for the poor. According to Moses' biographer, Robert Caro, "When he built housing for poor people, he built housing bleak, sterile, cheap...and he built it in locations that contributed to the ghettoization of the city, dividing up the city by color and income."[49] Many of these public housing projects were in the South Bronx where they "crammed the remaining fragments of neighborhood with destitute and rootless families who

[46] Ultan and Unger 180.
[47] Ultan and Unger 180.
[48] Ultan and Ungar 179
[49] Robert Caro, *The Power Broker* (New York: Vintage Books, 1974) 20.

had nowhere else to live."[50] The shortage of good quality, middle-class housing forced remaining urban dwellers to other parts of the city and suburbs.

Prior to the mid-1940s there were few black families in the South Bronx.[51] However, during the 1950s, large numbers began to migrate to the Bronx from southern states and Harlem.[52] Puerto Rican immigration also increased and peaked in 1954. Many of these families settled in Hunts Point.[53]

The Burning Bronx

Financial and insurance policies, public housing developments, and effects of the Vietnam War intensified the impacts of the postwar construction and suburbanization on the South Bronx. According to Eugenie Birch, Chair of the Urban Planning Department at the University of Pennsylvania, "The devastated South Bronx of 1978 was a result of thirty years of well-meaning, but destructive housing policy, highway building, and urban renewal."[54] For the growing primarily black and Hispanic communities, racism played a role, as well.

During the 1960s and 1970s, the drug epidemic led to increasing violence in the borough. Fear of violence helped to push more residents out of their neighborhoods to new suburbs, accelerating the out migration process. The new, lower-income residents to The Bronx, taking advantage of the lower rents left by the new suburbanites, found a massively reduced demand for low-skilled workers. They also found deteriorated housing and "a system of schools and social services overwhelmed by the needs of the new, poorer residents."[55]

Due to the Federal Housing Administration's policy not to guarantee mortgages on multifamily dwellings inhabited by unemployed or working poor residents,

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[50] Paul S. Grogan and Tony Proscio, "The Bronx: From the Bottom-Up," *Greater Philadelphia Regional Review* (Fall 2001) 1, http://www.metropolicy.org/pdfs/bronx-RR.pdf.
[51] Ultan and Unger 158.
[52] Ultan and Unger.
[53] Ultan and Unger 161.
[54] Eugenie Birch, "From Flames to Flowers: Twenty Years of Planning in the South Bronx" Part of *Imaging the City* Colloquium at the Department of Urban Studies and Planning at MIT (October 19, 1998).
[55] Ultan and Unger 192.

Figure 4: Devastation & ruins after arson, Source: Mel Rosenthal, "In the South Bronx of America," *Curbstone Press.*

building owners found it difficult to make necessary repairs. Tenants who could leave these conditions did. Vandals would often strip empty units for salvageable materials, leaving the buildings in even worse conditions. The policies of insurance companies made it more profitable at times for owners to abandon or destroy their buildings, and consequently many building owners preferred to torch their buildings than own them. Some tenants would burn down their homes in order to collect welfare money and relocation money from the Department of Social Services and to move to the top of waiting lists for better city apartments. Arson became an epidemic to the extent that Engine Company 82 on Intervale Avenue and 167th St in the South Bronx averaged 700 fire calls a month, making it the busiest firehouse in the world.[56] Mario Merola, a former City Councilman from The Bronx, explains how the government and policies were partly responsible for this situation in his memoirs *Big City DA.*

> "First, we allowed the problem to fester by ignoring the conditions that led to it...And when the fires occurred, we had a system of rewards, both for tenants and landlords...Our laws and politicians were providing incentives for people to destroy neighborhoods... insurance money; government funding to purchase the site from the landlord or help him rebuild; a virtual tax pardon on these buildings—no law said that property taxes had to be paid out of the proceeds. Is it any wonder that most of the torched building were in tax arrears? The insurance companies never even investigated those fires and never forced the landlords to rebuild. They just paid out the claims and passed the expense on to everyone else in the form of higher premiums. Talk about take the money and run."[57]

In addition, if a resident lived within an area that insurance companies considered to be the South Bronx, they would have to pay higher insurance

[56] Ultan and Unger 226.
[57] Ultan and Unger 221.

rates, have a harder time receiving a mortgage, and receive "poorer services and all the other mean and petty consequences of racial discrimination."[58]

Living conditions amidst the abandoned and burned-out buildings included ubiquitous garbage and vermin. According to Lloyd Ultan and Barbara Unger in *Bronx Accent,* this dehumanizing environment led to the widespread use of drugs and crime, which helped to further destabilize the South Bronx. Violence intensified with the availability and use of guns. Remaining merchants closed their stores and moved away from the drugs and violence. In addition, teenage pregnancy rates increased and social services declined with NYC's financial crisis in the 1970s.

For most people with a choice, the South Bronx was not a place to live, but rather "merely a place to pass through at high speed to and from home and work."[59] The neighborhood became the poster child of urban blight thanks to two events in 1977, which illustrated the devastation in the South Bronx for the rest of the world. First, journalists photographed President Jimmy Carter's visit to Charlotte Street, which at the time was a "vacant ruin of blocks upon blocks of rubble."[60] During the World Series the same year at Yankee Stadium, a camera from a blimp caught and focused on the image of a house burning in the South Bronx. Howard Cosell, the announcer for the baseball game, exclaimed, "The Bronx is Burning!" a phrase which continues to form perceptions of the South Bronx to this day.

While city agencies placed decals of painted windows with flowers pots in order to camouflage the emptiness of entire neighborhoods for the passing motorists, the area continued to decline. The drug epidemic, the lure of suburbs, massive reduction in the need for low-skilled jobs, deteriorating housing, crime, over-burdened schools and social services, massive influx of poorer residents, new public housing projects, FDA's refusal to guarantee mortgages on the

[58] Ultan and Unger 259.
[59] Ultan and Unger 219.
[60] Ultan and Unger 220.

neighborhood's multifamily dwellings and other factors contributed to the unsustainability of its communities.

The Bronx Renaissance

Community organizations, churches, and local officials began to rebuild housing in the South Bronx, even before the burning era came to an end. Developments in the neighborhood, especially new housing, became national models of community-based revitalization with an emphasis on housing. By 1997, the National Civic League (NCL) awarded "The Burning Bronx" the title of "All America City," the NCL's highest honor.

Due to the City's fiscal crisis, it was not able to financially support new developments in the 1970s. Residents took the situation into their own hands by planning community gardens on vacant land with the City's approval. Some neighbors came together to hold onto their communities, such as Longwood Community Historic District Association. The block gained landmark status designation in 1980. The Banana Kelly Community Improvement Association on Kelly Street began fighting housing abandonment in the mid-1970s and later became a major developer in Longwood and Hunts Point. Other groups, including Bronx United in Leveraging Dollars (BUILD) and South East Bronx Community Organization also became area developers.

Starting in the eighties, city officials allocated funds to support building projects in the area, beginning with the infamous Charlotte Street. In 1984, Mayor Ed Koch placed Edward J. Logue of the Bronx Democratic Party, well-know for urban renewal master planning in Boston, in charge of the South Bronx Development Organization (SBDO). Logue's first project was the ten single-family, suburban-style Charlotte Gardens Housing Development. Additional funding for Charlotte Gardens came from the Ford Foundation and Local Initiatives Support Corporation (LISC), federal subsidies, and lowered mortgage rates.[61] Logue recruited local community groups and other non-profits for the redevelopment

[61] Ultan and Unger 277.

projects. The Catholic clergy of the South Bronx significantly contributed to the SBDO and worked with Logue to build many developments, including 2100 new and renovated apartments and two dozen single-family houses.[62]

Financial assistance significantly contributed to the revitalization of the South Bronx. City and federal rent-subsidy programs and low-interest improvement loans contributed to the restoration of standing buildings, including the grandiose apartment houses along the Grand Concourse, once deemed to be the Park Avenue of The Bronx. Industry renewed its interest in the locational assets of the Bronx's industrial areas, including Port Morris and Hunts Point, in part due to the establishment of New York State Economic Development and Federal Empowerment Zones, which provide tax benefits to companies who invest within the designated areas. High Manhattan rents played a role to the attractiveness of the industrial space of the South Bronx, as well.

City plans and community desires did not always coincide. Two community groups, the South Bronx Churches and The Bronx Center, demonstrated the community's ability to organize and affect change during the planning of the Melrose Commons Urban Renewal Area.[63] They attracted a diverse group of neighbors to join their efforts to "Help save our community. Make changes for your own future. Do not let your children down. Plan for your future and their future."[64] In April 1989, 8000 demonstrators protested plans for more apartment houses. After the City released actual plans for a 30-block section of Melrose Commons in August 1990, community groups began to work on their own plan. The alternative community plan they presented identified development goals and principles that would ensure the social, economic, and environmental sustainability of the neighborhood. They also established the Nos Quedamos/We Stay committee with the responsibility of organizing and planning

[62] Ultan and Unger, 278.
[63] A coalition of 45 churches, created in 1987 by organizers from the Industrial Areas Foundation (IAF), founded by Saul Alinsky
[64] Sustainable Communities Network Partnership, Sustainable Communities Network Case Studies, "Urban Renewal in Melrose Commons" (1996), http://www.sustainable.org/casestudies/newyork/NY_af_melrose.html.

for Melrose Commons. According to Nos Quedamos, "As the plans for the neighborhood continue to be enacted, the residents of Melrose Commons will ensure that their voices are heard by their community representatives as well as their elected public officials."[65]

Community organizations also began to provide deficient social and health services. One group, PROMESA, obtained a much-needed mailbox and built a park for its neighbors. It provides affordable healthcare, psychiatric counseling, nursing services, HIV/AIDS counseling, substance abuse programs, and career guidance. The Point Community Development Corporation, which opened in 1994, fosters appreciation of local art and the environment, including the neighboring, yet inaccessible, rivers.

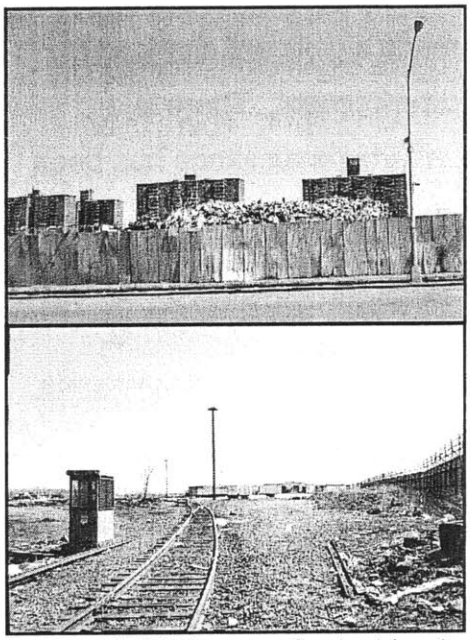
The work of the community and local officials has made significant changes in the South Bronx, which are spurring new types of development. There is a growing antiques district now in Port Morris. A visual arts renaissance has been underway with the help of the Bronx Museum of Arts, Hostos Community College, Bronx River Arts Center, Io Gallery in Tremont, En Foco, and the popularity of graffiti art. According to Ultan and Unger, "The Bronx is being restored primarily by the people who lived through the grim time when landlords were torching their own buildings for insurance money." [66]

The South Bronx Today

In the words of former Bronx Borough President Fernando Ferrer in his 2000 State of the Borough Report, "Powered by our tremendous community revival—all across The Bronx, our borough today stands at the brink of an era of unprecedented prosperity."[67]

[65] Sustainable Communities Network Partnership
[66] Ultan and Unger 298.
[67] Bronx Borough President Fernando Ferrer, Bronx Borough President's Office, "State of the Borough" (2000) 2.

Still, the South Bronx is one of the poorest areas in the nation, with high unemployment and asthma rates. The Mott Haven section of the South Bronx has the highest poverty rate in NYC at a rate of 65.3 percent.[68] Home ownership rates in the area are among the City's lowest. As of April 2002, the unemployment rate of the South Bronx was significantly higher than that of the rest of New York City at 20 percent compared to the City's 7.6 percent.[69] Public health experts estimate that over 20 percent of the children have asthma.[70] The hospitalization rates for asthma in Bronx County are 21 times higher than that of affluent parts of the city and rates five times higher than the national average.[71] The Bronx also has the highest growing rate of new AIDS infection, percentage of obesity, and the highest rates of diabetes in NYC.[72]



Figures 5 & 6: Waste transfer site (above); future site of Fulton Fish Market at Hunts Point

Polluting industries and congested highways surround residents who still live amidst vacant, garbage-strewn lots and decaying housing. There are three dozen waste facilities, including private solid waste transfer stations, city-owned marine transfer stations, waste water treatment plants, combined sewer overflow outfalls, sludge treatment facilities, recycled materials handling facilities, junkyards, auto salvage yards, scrap metal and construction debris processing facilities, yard waste and composting sites, and medical waste disposal plants.[73] Hunts Point alone

[68] Roland, Lewis, Habitat for Humanity—NYC, "Habitat for Humanity – NYC Breaks Ground On 13 New Homes In Mott Haven" (23 March 23).
[69] Hershkowitz 5. Note that these rates have changed since September 11, 2001 and the current economic recession.
[70] Rae Zimmerman, "South Bronx Environmental Studies: Public Health and Environmental Policy Analysis," Final Report for Phase I, Institute for Civil Infrastructure Systems (ICIS), New York University, Robert F. Wagner Graduate School of Public Health (September 2002) 64.
[71] Zimmerman 64.
[72] Bronx Borough President's Office, President Adolpho Carrión, Jr. "State of the Borough—The Bronx 2002," (19 March 2002). http://www.the-bronx.org/news/journal/carrion2002.asp.
[73] "Zimmerman 64.

contains 40 percent of the meat and 80 percent of the produce distribution of the New York metropolitan area and site preparation is underway for the Hunts Point Fulton Fish Market. The existing markets already cause close to two million truck trips a year.

The industrial activity in the Bronx has some significant positive aspects. Former President Ferrer explains, "Approximately 20,000 people work for companies in Hunts Point ...Over the past 15 years, the resurgence in energy experienced by the business community has spilled over to its residential population, and, once again, the future of Hunts Point flourishes with hope and optimism."

The Hunts Point Cooperative Market, according to Ferrer's statement, averages over $4.5 billion in sales annually. The Bronx Terminal Market in Hunts Point employs over two-thirds of employees in the City's food industry. The New York Post's purchase of land in Port Morris brought 750 jobs to the area. Green, or ecologically friendly, industries are emerging in the South Bronx, as well, with Inner City Oceans, the City's only biologically and environmentally friendly fish farm and Full Circle, Inc, which recycles PVC ballasts and reclaims mercury-containing materials such as batteries and florescent light bulbs.

The economy is growing, according to Patrick Barnhart, Economic Development Planner at the Bronx Overall Economic Development Corporation (BOEDC), part of the Bronx Borough President's Office. In the twenty census tracks in the South Bronx that are in an Empowerment Zone[74], BOEDC alone, not including financing and investments made by other organizations, has made loans totally more than $20 million. Banks are also making loans to the area, and unlike the recent past, are offering rates comparable to the rest of the region.[75] New businesses from across the region and abroad are looking to relocate here, especially since September 11th, 2001. "The borough's market size, increased

[74] The Empowerment Zone (EZ) program, established in 1993 under the Federal Omnibus Budget Reconciliation Act, is the capstone of the Clinton Administration community revitalization strategy. Each U.S. Department of Housing and Urban Development (HUD) designated EZ is awarded federal grants and various tax benefits for EZ-based businesses.
[75] Ultan and Unger 297.

buying power, and below capacity space inventory continues to generate a strong demand for new store construction."[76] Borough officials claim that retail is booming, especially in "The Hub" in the South Bronx where large chains, such as Old Navy and the Gap are investing for the first time.

New investment is bringing employment opportunities for residents. According to the 2000 State of the Borough Report, employment is growing faster than any other borough, except Manhattan. Between 1994 and 2000 10,500 new jobs were created in the borough, including 3500 in 1999 alone. The number of employed residents increased by 34,400 or 6.1 percent during that time, with 96 percent of new jobs occurring in the private sector. The Bronx's opportune location offers the possibility for additional growth given that more potential employees and customers live within 25 miles of the Bronx than any other region in the nation.[77]

The economy and employment are not the only things growing in the South Bronx; the once declining population is also experiencing considerable growth. Between 1990 and 2000, the population of the Bronx increased by ten percent, mostly in the South Bronx, where the growth reached 11.8 percent. This growth was greater than that of NYC's with a rate of 9.4 percent and more than double that of the state with a rate of 5.5 percent. New residents from all over the globe are moving to the borough, bringing with them their cultures and new businesses. "Neighborhoods that have been divested are now making comebacks," explains Barnhart. As the third fasted growing borough, the population growth rate of the Bronx is above the City's average. The residents are making more money, as well. Between 1987 and 1997, personal income grew by four percent in the borough.

As described previously, housing construction has played a large role in the revitalization of the South Bronx. The city and federal funds, community organizations and other developers built over 63,900 units between 1987 and

[76] Ferrer 2.
[77] Bronx Overall Economic Development Corporation 2.

2000. In that time, they also developed 6624 new single-family homes for first time homebuyers. The community and developers have plans for much more development. The cost of living in Manhattan and the suburbs rose rapidly in recent years and therefore the affordable and middle-class housing in the South Bronx is an important resource for the borough and the entire region. The Bronx's location in the middle of Manhattan, New Jersey, Westchester County, and Long Island make this resource even more crucial.[78] This growth potential fuels growth in the other parts of the economy mentioned above. "With the residential reclamation of the South Bronx as a lower-middle-income base for the City as a whole assured, the early seeds of retail development followed...that saw in a newly stable Bronx the real estate location and transportation infrastructure resources capable of serving a more regional market."[79]

Housing is not the only recent draw to the Bronx. Cultural institutions attract residents, more business opportunities, and visitors to the borough, as well. These include the Bronx Zoo, New York Botanical Gardens, Yankee Stadium, and the various art institutions previously mentioned. The borough is trying to realize the economic development potential of the arts, sports, and parks with its "Yes, The Bronx!" campaign.[80]

Conclusion

According to former President Ferrer, the development in The Bronx is "Fast becoming a prototype for what can be achieved even in so-called "distressed" areas."[81] The new fiscal crisis in New York City and the economic recession of recent years have already showed signs of slowing down development, but have not stopped it. To ensure that the South Bronx's progress is not lost during these new economic uncertain times, it is important that developments aim to make the

[78] The 1999 Newman Institute City Roundtable, "Bronx Reborn: Developing Regional Assets" (30 March 1999), http://www.baruch.cuny.edu/realestate/bronx_transcripts3.htm.
[79] The 1999 Newman Institute City Roundtable.
[80] Bronx Overall Economic Development Corporation, "The Art of Doing Business," http://www.boedc.com/press/pdf/SpringNewsletter.pdf
[81] The 1999 Newman Institute City Roundtable.

South Bronx a healthy and affordable place where people want to live and invest. Incorporating green building practices into development plans may be one way to do so. Developments in Melrose Commons are already showing that it is possible.

Through environmental protection, lower utility and maintenance costs, and healthier indoor environments, the green building developments in the South Bronx aim to play a role in the community and economic development that is creating a more sustainable South Bronx. New York State and the City have various programs and institutions trying to increase the presence of green building practices in the South Bronx and NYC as a whole, thereby promoting more sustainable development. All of the existing green developments in the South Bronx are to some extent a result of these programs and institutions.

However, the South Bronx has a long way to go on its journey towards sustainable development. Its residents still face severe problems, which include unhealthy and poor quality housing and schools. The question remains whether the state and city green building proponents have the governance and capacity to adequately promote green building in the South Bronx and engage its residents in the process. To begin to answer this question, I outline the institutions in the next chapter that support the current green building activity and potentially future developments in the South Bronx and New York City as a whole.

Chapter 3
Governance and Capacity in New York

The recent green building developments in the South Bronx are possible through technical and financial support from state and city government agencies, private firms, and various non-profit organizations. These organizations are all a part of and are furthering New York's green building movement. Their roles in furthering green building vary, as do their levels of impact on the South Bronx.

The power and money behind New York's green building movement, including the developments in the South Bronx, flow through Albany from two primary sources. The Office of Governor George Pataki and the New York State Energy and Research Authority (NYSERDA), which collects money from a surcharge tax on utility bills. Their efforts, along with large, private sector partners, have propelled New York into its leadership position within the nation's green building movement. The state's green building goal is to transform the market for green building materials and developments, promoting both environmental protection and economic growth. To do this, state programs have mostly concentrated on a few high-profile green building developments in addition to guidelines for state buildings. However, a few state and utility programs do target smaller projects. Both the large- and small-scale green developments that these programs support demonstrate the multi-organizational collaborations that epitomize the sustainable development era of environmental policy.

Office of the Governor

Governor Pataki has exemplified the power of top-level commitment and prioritization to put the wheels of change in motion towards sustainable development. Two pieces of legislation in particular, the New York State Green Building Tax Credit (May 2000) and Executive Order #111 (June 2001), put into

action promises of environmental protection and economic growth with the promotion of green building practices.

The New York State Green Building Tax Credit (GBTC) is the nation's first tax incentive program for the design, construction, or rehabilitation of green buildings. The tax credit's goal is to encourage the building industry to incorporate green building practices on a large scale by offsetting initial costs thereby making green projects a more affordable and attractive option.[82] The creation and implementation of the GBTC has been and continues to be a collaboration between the Department of Environmental Conservation (DEC), developing and administering the regulations; NYSERDA with Steve Winters Associates, a leading energy consultancy, providing technical support to DEC and applicants; and an advisory committee of representatives from various state agencies, advising the rule-making process.

DEC began accepting applications to the $25 million program in September 2002. The basic criterion for eligibility is LEED™ compliance (but not certification) as well as additional appliance standards. Unlike LEED™, however, eligible buildings must meet specific energy performance targets. The GBTC also requires an indoor air quality management plan, recycling plan, specific indoor air quality measurements, commissioning, compliance certification, and record keeping. Compliance of local zoning, land use, erosion control, storm water management, building codes, and environmental regulations are also mandatory. Since applicants must be taxpayers, non-profit organizations do not qualify.

Recipients of the tax credit, including both the building owners and tenants, receive the benefits over a five years period. DEC chooses awardees among qualified applicants on a first-come, first-serve basis and calculates the size of

[82] New York State Department of Environmental Conservation, "New York State Green Building Initiative," http://www.dec.state.ny.us/website/ppu/grnbldg/index.html

the credit based on a percentage of capital costs of six building components listed below.

Table 3.1

New York State Green Building Tax Credit Calculation

BUILDING COMPONET	% OF CAPITAL COSTS	ECONOMIC DEVELOPMENT AREAS
Whole building	7%	+ 1%
Base building	5%	+ 1%
Tenant space	5%	+ 1%
Fuel cells	30%	-
Photovoltaic modules	100% (incremental cost)	-
Green refrigerants*	10%	-

*EPA approved air conditioning equipment

To date, DEC has allocated over $18 million to five projects, including 1400 on 5th in Harlem, 959 8th Avenue on the West Side, Octagon Terrace on Roosevelt Island and 20 River Terrace in Battery Park City in New York City. The only project outside of Manhattan is 625 Broadway in Albany.

While the tax credit offers developers and tenants a carrot to build green, three of the five recipients chose to be green, in part, because they were told to do so. A little over a year after Governor Pataki proposed the Green Building Tax Credit, he signed Executive Order #111, the "Green and Clean" State Buildings and Vehicle Guidelines, which encourages that each state agency, public benefit corporation and public authority follow energy efficient and ecologically friendly guidelines.

The Order intends to improve the energy efficiency and the environmental awareness of state agencies and authorities through fulfillment of "Green and

Clean" guidelines and encouragement of life cycle cost analyses for energy-related purchases. With the purchasing power and market demand of the State, it aims to spur the transformation of the construction and materials market to include energy efficient, renewable, and green products.

To promote green materials and buildings, a major focus of the legislation, the Order directs state agencies "to the maximum extent practicable, follow guidelines for the construction of 'Green Buildings,' including guidelines set forth in Tax Law § 19, which created the Green Buildings Tax Credit, and the U.S. Green Buildings Council's LEED™ rating system."[83]

Although the lack of enforcement and the phrase "to the maximum extent practicable" allow room for noncompliance, a few green building success stories in New York do stem from this directive, including the tax-credit recipients in Albany and Battery Park City, discussed below. It has also sparked the educational efforts of major developers and architects who anticipate a future demand for green building and therefore want to establish their places in the market.

The governor has also leveraged the influence of his public office to set targets to measure the success of his sustainable initiatives. In Executive Order #111, he requires all state buildings to reduce energy use by 35 percent by 2010 relative to 1990 levels. He aims to further reduce the dependency on fossil fuels by increasing the use of renewable sources of energy, such as solar, wind, and fuel cells. In his 2002 "State of the State" speech he stated the following,

> "We can make New York a national leader in renewable energy usage. I am directing the Public Service Commission to implement a Renewable Portfolio Standard—a program which will guarantee that within the next 10 years at least 25 percent of the electricity bought in New York will come from renewable energy resources like solar power, wind power, or fuel cells."

[83] State of New York, Executive Chamber, New York State Executive Order #111, "Clean and Green State Buildings and Vehicles" (19 June 2001).

However, there are no additional policies to mitigate the political and market barriers that currently prevent attainment of these goals.

Battery Park City Authority

High profile developments with the help of New York State financial incentives, prescriptive and mandatory guidelines, and a large, progressive developer can overcome many of the existing barriers to improve energy efficiency, increase renewable energy use, and employ a host of other innovative technologies. While this is not possible for most developments, the Battery Park City Authority (BPCA) and the Albanese Development Company, recipient of the Green Building Tax Credit, were able to achieve a relatively high level of green building in *The Solaire* at 20 River Terrace in Battery Park City. *The Solaire* is the nation's first green residential high-rise building. It has become a national model of innovative green design and members of its development team have become leaders in New York City's green building movement.

Along with future residential developments in Battery Park City, *The Solaire* follows the Hugh L. Carey Battery Park City Authority Residential Environmental Guidelines. The Planning and Design Department of Battery Park City, in collaboration with NYSERDA, Rocky Mountain Institute (RMI), the Carrier Corporation, Fox & Fowle Architects, and Flack + Kurtz architects, created these guidelines to fulfill Executive Order #111. The guidelines ensure compliance to BPCA and the state's desired green building standards. According to Stephanie Gelb, an architect with the BPCA, the guidelines offer more than Executive Order compliance. "Incorporating sustainable principles in the development of the residential buildings serves to enhance the current marketing strategies that continue to make Battery Park City a successful endeavor."

The residential guidelines cover five categories: energy efficiency, enhanced indoor air quality, conserving materials and resources, water conservation and site management, and operations and maintenance. Each section explains the reason behind the standards, the available technologies and strategies to fulfill

them, and the cost implications and potential funding sources for those technologies and strategies. The New York State Green Building Tax Credit is the only funding source listed.

Recently, the BPCA drafted guidelines for commercial buildings, as well. The Hugh L. Carey Battery Park City Authority Commercial / Institutional Environmental Guidelines 1.0 takes into account lessons learned from September 11th, 2001, such as decentralized technologies, distributed generation, and indoor air quality. These guidelines also address the enhancement of the USGBC's LEED™ rating system with the introduction of LEED™ Version 2.0. The BPCA has closely coordinated their guidelines with this version of LEED™ and notes that unlike LEED™, the requirements of BPCA's guidelines are mandatory.

Demonstrating the learning process and maturation of the green building movement, the BPCA updated its residential guidelines in January 2003. It released a request for proposal (RFP) for another green development last fall and is hoping that the available Liberty Bonds for developments in Lower Manhattan will help attract developers in today's slower economy. In regards to being a model for green development in NYC, Ms. Gelb responded, "It depends on the neighborhood. If people want to build there, yes it could be a model. If not, it is hard to make them do what you want them to do."[84] She also notes the unique situation of Battery Park City as a state-owned entity with state-owned land. BPCA is able to offer developers cheaper land leases to help offset additional costs associated with green building.

NYSERDA

One common theme of all green building and energy efficient projects in New York is the role of NYSERDA. New York State Legislature created NYSERDA in 1975 as a public benefit corporation to help business, municipalities, and

[84] Stephanie Gelb, Architect, Battery Park City Authority, phone interview (8 January 2003).

residents in New York solve energy and environmental problems while developing new, innovative products and services to benefit the state's economy. NYSERDA offers technical support, funding, and administration of energy efficiency programs.

NYSERDA is the state's leading green building agency. Its green building work primarily occurs under four categories: New York Energy $mart programs, Green Building Tax Credit/Executive Order 111 support, New Construction Program, and Assisted Home Performance Program plus numerous case-by-case projects.

- New York Energy $mart works to lower electricity bills by encouraging energy efficiency. Its programs support providers of energy efficient products, energy efficiency initiatives of state buildings, lower-income residents, and research and development. The various programs encourage the use of Energy Star® products, as well.[85] Energy $mart also developed the New York Energy Star® Labeled Homes Program, a rating system for energy efficiency based on the US EPA's Energy Star® program with the addition of ventilation requirements.

- Green Building Tax Credit / Executive Order 111. NYSERDA offers technical support for both and plays a large role in marketing the Tax Credit.

- New Construction Program provides free or subsidized technical assistance for energy efficiency evaluations in the construction or substantial rehabilitation of both public and private multi-family dwellings. Buildings that have been vacant for over 30 days are also eligible. Cash incentives are available for the installation of energy efficiency measures. According to Craig Kneeland, Senior Project Manager of NYSERDA's Energy Efficiency Services, "The New Construction Program is one of the most popular programs. We provide cost-shared consultation and measures will cover up

[85] Energy Star® is a U.S. Environmental Protection backed label for energy efficient appliances and lighting. http://www.energystar.gov.

to 70 percent of incremental cost of upgraded measures. With our payback criteria of less than a one year simple payback, it is a no-brainer." This program also has an educational component to it. Through its program, NYSERDA representatives attempt to introduce green building to a project's architects, engineers, and owners and inform them of the cost and benefits of feasible green options. "We try to demystify the green building thing...and try to back it up with facts, figures, and funding."[86]

- Assisted Home Performance Program is a new program for existing one- to four-unit residential buildings whose occupants make 60 to 80 percent of the median income. It provides $100 for an energy audit, funding for a portion of the work, and a low-interest loan to cover the rest of the costs.

In addition to its financial and technical support programs, NYSERDA is New York's green building educator. For example, the New York City satellite office markets green building and NYSERDA's programs through seminars and workshops. Large companies and agencies, such as the utility company Con Edison, often ask NYSERDA representatives to speak with potential clients and partners.

Other State Offices

Table 3.2 summarizes the green building contributions of Governor Pataki, NYSERDA, and the other organizations that contribute to the state's leadership in sustainable initiatives.

TABLE 3.2
NEW YORK STATE'S GREEN BUILDING EFFORTS

AGENCY/ORGANIZATION	GREEN BUILDING ACTIVITY
Office of the Governor	Executive Order #111 Green Building Tax Credit Renewable Energy Targets
Department of Environmental Conservation	Green Building Tax Credit
New York State Energy and Research	Green Building Tax Credit

[86] Elizabeth Kerry, Project Manager, NYSERDA, phone interview (20 February 2003).

Development Authority	New York Energy $mart New Construction Program Assisted Home Performance Program Education and marketing
NYS Division of Housing and Community Renewal	Weatherization Assistance Program
Quality Communities Task Force	Clearinghouse for information and available resources
Metropolitan Transit Authority	Solar panels on stations and track switches
Battery Park City Authority	High Performance Building Guidelines *The Solaire*

As Table 3.2 indicates, the NYS Division of Housing and Community Renewal (DHCR) also contributes to New York's green building progress. DHCR's Weatherization Assistance Program works similarly to NYSERDA's Assisted Home Performance Program, but targets households with a family member receiving Supplemental Security Income (SSI), Public Assistance, Food Stamps, or Home Energy Assistance Program (HEAP) benefits. With funding from the US Department of Energy, the Low Income Home Energy Assistance Program, and the NYS Office of Temporary and Disability Assistance, DHCR funds an energy audit and installs weatherization strategies, such as weather-stripping and caulking around doors and windows; cleaning, testing, repairs or replacement of heating systems; replacement or repair of storm windows; replacement or repair of broken windows and/or outside doors; the addition of insulation to walls or ceilings; and minor repairs, as needed, to ensure maximum efficiency.

In addition to state funding, directives, and technical support, information helps promote green building by advancing awareness among constituents. New York's Quality Communities Interagency Task Force, established by Governor Pataki, created the Quality Communities Initiative to help local governments and community members keep track of the State's environmental and community programs and facilitate the flow of information. The Initiative's web-based database, still under development, aims to "consolidate and organize those state

agency services that support the development of quality communities."[87] The database includes grant and financial information, publications, events, inventories, and success stories. Web surfers can find information on DEC, NYSERDA, and DHCR's green building services, including the New York State Tax Credit, on the website as well as energy efficiency programs from their energy providers.

Leading by example is another method of spreading information. New York City Transit, a part of the Metropolitan Transit Authority, is the unlikely green and renewable energy pioneer of the City and State installing renewable energy technologies throughout the five boroughs. By the time Governor Pataki directed state entities to obtain 10 percent of their electricity from green sources by 2005, NYC Transit had already completed a bus depot in the Bronx with a 33-kilowatt solar system on its roof—one of the world's largest at the time. Since then, it has leveraged energy from the sun to light facilities, heat water and work track switches. MTA has plans to include a 65 kilowatt solar system on the Roosevelt Avenue/74th Street Station in Jackson Heights, Queens; a 145-kilowatt system that will provide nearly 100 percent of the electricity to Stillwell Avenue Terminal in Coney Island, Brooklyn; and a 100-kilowatt rooftop photovoltaic system and 200-kilowatt fuel cell system to Corona Yard and Maintenance Facility in Queens. NYC Transit states that photovoltaic panels require very little maintenance and are very cost-effective for the agency.

Utility Companies

To supplement state initiatives, energy service providers offer various programs to promote energy efficiency as well as a few to promote renewable energy. Energy audits, consultation, and rebates for the use of energy efficient appliances are just a few examples. They also tend to support a few community

[87] New York State's Quality Communities Initiative, http://www.dos.state.ny.us/qc/home.shtml.

initiatives as well, normally in the communities where they have power generators.

The role and jurisdictions of energy-service providers is complex given past mergers and recent deregulations. New York City receives regulated service from Con Edison (Con Ed), Keyspan, and the New York Power Authority (NYPA). Con Ed provides electric service to most of New York City and natural gas service in Manhattan, the Bronx, and parts of Queens. Keyspan provides natural gas service to Brooklyn, Queens, and Staten Island while NYPA, a public benefit state authority, provides energy services for publicly owned facilities. For the purposes of this thesis, I am going to summarize only those programs that relate to green building, sustainable communities, and related energy-efficient programs these providers offer.

TABLE 3.3
UTILITY PROGRAMS

Con Edison

PROGRAM	DETAILS
Free Thermostats for Central Air Conditioning Customers	Offer of free, programmable thermostats to residential customers and religious institutions with central air conditioning to help manage their electricity consumption during the summer
Green Horizons	A conference offering middle school students hands-on lessons about a variety of environmental and natural- resources careers.
Solar array installation	Installation of NYC's largest commercial rooftop solar power system in Brooklyn
Hunts Point Market Truck Stop Electrification Project	Example of community project. Partners include Clean Air Communities, Sustainable South Bronx, and NYPA.

Keyspan (Both Regulated & Unregulated Divisions)

PROGRAM	DETAILS
KeySpan Energy Boiler Replacement	Financing and a $200 per unit rebate for the purchase and installation of a gas boiler in multi-family buildings.
Area Development Fund	Low-cost financing to individuals, organizations or corporations as an incentive to create new or rehabilitated affordable housing
KeySpan Cinderella Program	Previously program granted to communities and individuals to rehabilitate the facades of buildings that have been vacant for at least six months in order to stabilize neighborhoods and housing throughout service area. Program is currently out of funding.

Lobbying	Lobbies the State to reduce barriers that would promote both their business and green building, such as actions to mitigate barriers to distributed generation
KeySpan Business Solutions	Energy consulting; water, wastewater and waste-to-energy; cogeneration, distributed generation, and district heating and cooling systems; and site planning and brownfield redevelopment as well as permitting, engineering, design/build, audits, assessments, and commissioning.

New York Power Authority

ENCORE Program	A $150 million fund for projects such as coal boiler conversions, high-efficiency lighting, motors, chillers, and energy management systems that save the City over $10 million in annual energy expense. Its funding structure includes 10 years of neutral cash flow followed by a positive flow so that the reduced energy costs offset the financing payments over the life of the installation.
HELP (High Efficiency Lighting Program)	Lighting upgrades as a means to improve energy efficiency
2002 Keep Cool Bounty Program	New York residents a $75 rebate incentive to replace their old room air conditioners with a new Energy Star® model.
NYCHA refrigerator replacement	Replacement of energy-draining refrigerators in New York City Housing Authority (NYCHA) public housing developments with new compact units that cut energy consumption in half and use more environmentally benign refrigerant gas.
Furnace replacement in NYC public schools pilot program	Replacement old, polluting coal-fired furnaces in NYC Public schools with clean, modern natural gas- or oil-fueled boilers
Photovoltaic skylight	In partnership with DDC, installation on Riker's Island Composting Facility
Fuel cell installation	• Coney Island Aquarium plus $2 million to cover of incremental costs for other fuel cell projects • Central Park Police Precinct • North Central Bronx Hospital

New York City Agencies

In most green building literature, New York City receives mention as a green building leader. Yet unlike other leading green building cities, NYC does not have a comprehensive green building strategy nor does it have any mandatory green requirements or financial incentives. However, it does have model projects such as 4 Times Square and *The Solaire* as well as one of the nation's first green building guidelines, created by the City's Office of Sustainable Design

and Construction. Table 3.4 summarizes the green building efforts of New York City agencies.

TABLE 3.4

NEW YORK CITY'S GREEN BUILDING EFFORTS

DEPARTMENT / ORGANIZATION	GREEN BUILDING ACTIVITY
Design and Construction	Office of Sustainable Design High Performance Building Guidelines Pilot projects
Housing Preservation and Development	Sunflower Way developments Habitat for Humanity-NYC Possible research and material procurement opportunities
New York City Economic Development Corporation (quasi-public)	Resource for green building and brownfield redevelopment information
New York City Council	Drafting green building legislation

In 1997, Hillary Brown and the Mayor's office founded the Office of Sustainable Design and Construction (OSDC) within New York City's Department of Design and Construction (DDC). Initiated by a collaboration of academics, city government officials, and architects from the private sector, Ms. Brown and the Mayor's office put together a report examining the possible benefits of green building and the feasibility of implementing these practices in NYC, given the success of new innovations and models from around the country. This report led to the creation of the OSDC, which subsequently began to look for pilot projects to implement green practices, create guidelines for the development to follow, and provide educational seminars for over twenty government agencies. It also continued to research state of the art strategies, technologies, and models from around the country to see which green building practices made sense for NYC.

The office is now famous for its High Performance Building Guidelines, which provides a menu of green development options for developers of city projects (DDC handles the construction of municipal projects.) The guidelines were the result of a collaborative process involving participation of the Design Trust for Public Space, NYSERDA, NYPA, as well as other public, private, and non-profit contributors. The guidelines are not mandatory for all city buildings nor are they enforced. Ten percent of DDC's $1 billion annual development portfolio follows

the guidelines. OSDC seeks out projects that more readily present green building feasibility; however at times project managers approach OSDC to initiate a green development. Current ODS green projects in the South Bronx include the Bronx Criminal Courthouse Complex and the Seabury Day Care Center. Altogether the High Performance Building program has twenty-four new construction or major renovation projects either under construction or completed. These projects have an aggregate construction value of $700 million. NYSERDA's cost-shared technical assistance and NYPA's Encore program have helped DDC ensure minimal taxpayer burden to cover any incremental costs associated with green development. The City repays the power authority over time through its energy savings, therefore enabling DDC to offset higher first costs through life-cycle savings.

John Krieble, Deputy Director of Sustainable Design for DDC, explains that DDC hopes to learn more about the implementation of green strategies from its pilot projects. If a certain technology works well and does not add costs or time to the project, DDC will attempt to move these 'no-brainers' into all agency projects as it has done for high recycled and low VOC content materials.

The Department of Housing and Preservation (HPD) is also trying to replicate lessons from pilot programs. HPD staff constantly struggles to maximize the number of units it constructs and rehabilitates in order to mitigate NYC's housing shortage while staying within its annual budgets. Therefore, HPD staff is concerned about the potential added costs and project delays of green buildings.[88] For this reason, all HPD green building developments are in partnership with or receive funding from other agencies. These projects include 1400 on 5th in Harlem and Sunflower Way in the South Bronx, for which HPD partnered with New York City Housing Partnership, U.S. Department of Energy's Build America, New York State Energy Star®, and NYSERDA. Similarly, HPD awarded Habitat for Humanity land to develop thirteen Energy Star® single-family homes under its New Foundations program, with funding from the Bronx

[88] Similar to DDC, HPD is not a developer. The agency acquires and land, releases Requests for Proposals

Borough President, the First Time Homebuyer Assistance Program of the NYS Division of Housing and Community Renewal, and the Independence Community Foundation.

HPD is trying to create agency-wide policies to promote green building. The agency is looking at the different NYSERDA programs and analyzing ways to leverage them to expand HPD's green purchases. HPD also hopes to partner with NYSERDA in a research endeavor to identify which green materials are financially feasible for HPD. If HPD can find funding for the incremental costs, it will purchase them.

HPD's borough offices do not have much power to affect changes in housing construction. However, as the agency responsible for urban renewal areas, they can encourage green development on those sites. As HPD's own architects become more familiar with green design, they may be able to recommend green strategies during the design approval process. However, green strategies are more effective and less costly when they are integrated early in the design process, as opposed add-ons at the end of the process.

The New York City Economic Development Corporation (EDC) is in a position to play a greater role in promoting green building and to administer citywide green building programs—if there were any. The quasi-public agency would like to promote more green building, but first must ensure that NYC, which already is a more expensive place to develop than the surrounding suburbs, remains an attractive option for investors and developers. EDC is working with the Natural Resource Defense Council (NRDC) and the U.S. Green Building Council (USGBC) to research potential guidelines and initiatives that are sensitive to the needs of NYC's real estate and business communities.

In the meantime, EDC remains committed to promoting green developments whenever it is feasible. EDC sells property for the City and therefore tries to encourage bidders to include sustainable and green practices in their proposals. If all else is equal between two proposals, which is an unlikely condition, green

building can be a factor in the selection process. Furthermore, EDC is looking into the feasibility of requiring all bid winners to consult with a LEED certified architect, optimally at a reduced or free charge, to identify green options.

EDC is also working with New York City Council to further examine possibilities of a New York City green building initiative. Members of the council are trying to approve a study to look at the overall costs and the secondary benefits of adopting a green building program in NYC, such as a LEED-based rating system. The study would try to establish a weighing system of green strategies where more important green components would receive priority, quantify the life cycle costs and benefits of green development for individual building and the City as a whole, and analyze the feasibility and implications of green rating requirements for public construction projects. Due to the City's strong real estate lobby, the council is only concentrating on public construction, but is looking into potential financial incentives to encourage private green development, as well. The City Council has yet to pass any of these green building initiatives.

Private Organizations

As the City struggles to create and implement green building programs, private non-profits are confronting current challenges to promoting green building—mainly through educational programs. On a statewide level, the Environmental Business Association (EBA) of New York has organized various events geared towards green building education. EBA has a Green Buildings Task Force, which aims to "facilitate the exchange of information, ideas and experiences among design and environmental professionals, developers, institutional owners, government and financial sectors, thereby promoting the development of environmentally sustainable buildings in New York State."[89] In collaboration with NYSERDA, this group has the potential to introduce green building to a large audience and continue the top-down, industry driven momentum of New York's

[89] Environmental Business Association, "Mission Statement," http://www.eba-nys.org/TaskForces/GreenBuildings/GBTFMission.htm

green building movement. EBA has five primary strategies to engage various stakeholders in green building discussions and improve the quantity of sustainable developments:

- A series of roundtables that focus on specific barriers and solutions to green development with representatives from the public sector, utilities, labor, development and design communities;
- Joint programs with specific end-user communities, such as Smart Schools, to foster interest and support for sustainable development in schools and other critical institutional sectors;
- Alliances with other real estate associations to expand the knowledge base, interest and markets, generating political support and interest in sustainable development;
- Extension of and refinements to the New York State Green Building Tax Credit program, and other legislative initiatives that create incentives promoting green building development; and
- Regular workshops and informational programs that bring together individuals with interest and experience in green design and development.

The EBA is implementing a few of these strategies in New York City. The organization sponsored the New York City High Performance Initiative, described later in this chapter, to identify and mitigate barriers to green development. It has also partnered with the Pratt Institute Center for Community and Environmental Development (PICCED) to organize a two-day conference in April 2003 on the use of ecological roof technologies and collaborated with AIA and the USGBC to sponsor a high performance building lecture. For October 2003, EBA has plans for an event showcasing businesses that manufacture, sell, install, service and consult on green building products.

Further evidence of the current momentum behind green building comes from emergence of new citywide organizations and initiatives. Similar to EBA, they attempt to educate, facilitate, consult, and implement green building practices as

well as other aspects of sustainable development. Business and design industry professionals and academics comprise the majority of these groups.

EBA, with the help of the Rockefeller Brothers Foundation, the Center for Economic and Environmental Partnership (CEEP), and Allen Zerkin, a professor at the Robert F. Wagner Graduate School of Public Service at New York University, initiated the New York City High Performance Building Initiative. Professor Zerkin, the initiative's facilitator, has assembled representatives from the various industries that work in and affect construction and development projects in the City. These representative contractors, developers, labor unions, city employees, lawyers, real estate brokers, architects, engineers, and environmentalists as well as major tenant and affordable housing organizers and members of commercial and real estate organizations meet in various working groups to identify the greatest barriers to promoting green building in New York City. Once the working groups pinpoint these barriers, they will create an Action Agenda to overcome them. These actions may include changing building code provisions or creating new legislation. Zerkin plans to ensure consensus among the stakeholders around each change action.[90] For some changes it will be possible and more practical to recommend unilateral changes, such as building code modifications; however other changes will require bilateral cooperation or council approval.

While the High Performance Building Initiative identifies barriers to mainstream green building, the New York City Housing Partnership (NYCHP), one of the nation's largest developers of affordable housing, is developing green buildings in lower-income neighborhoods and overcoming some of the most difficult barriers in the process. NYCHP partnered with the U.S. Department of Energy's Build American Program and NYSERDA to create two green affordable housing developments in NYC—1400 on 5th in Harlem and Sunflower Way in the Morrisania neighborhood of the South Bronx—as part of its High Performance

[90] Allen J. Zerkin, Senior Consultant and Adjunct Associate Professor Program on Negotiation and Conflict Resolution Robert F. Wagner Graduate School of Public Service, phone interview, (November 2002).

Building Program. Both developments serve as models of the possibility to develop affordable, green housing with the support of public/private partnerships, intergovernmental collaboration, and progressive financial institutions. In fulfillment of its mission "to foster the use of 'high performance' or 'green' building techniques in affordable housing projects,"[91] NYCHP is writing a manual on green affordable housing based on lessons from these two pilot developments.

TABLE 3.5

PRIMARY NON-PROFIT GREEN BUILDING ORGANIZATIONS

ORGANIZATION	GREEN BUILDING ACTIVITY
Environmental Business Association	Events geared towards green building education
New York City Housing Partnership	High Performance Building Program Sunflower Way developments
High Performance Building Initiative	Research the barriers to green building in NYC
Earth Pledge	*Sustainable Architecture White Pages* Green Roof Initiative
O2 New York City Chapter	Monthly Green Design Discussions
Community Environmental Center	Technical support for energy efficiency Eco-House and learning Center
GreenHome NYC	Green building education geared towards Manhattan Coops
Wa$teMatch	Material exchange program
Natural Resources Defense Council	Consult on high-profile green building projects Assist city officials in policy formation
Habitat for Humanity – NYC	Helping communities build Energy-Star homes

The Earth Pledge Foundation is also trying to educate developers, as well as city officials, contractors, architects, and engineers on the benefits of sustainable design. With an article from Patty Noonan of NYCHP and an impressive list of other green building leaders, the foundation published *Sustainable Architecture White Pages* in 2000, to introduce the concepts of eco-effectiveness, human-centered design, biomimicry, industrial ecology, solar energy, and ecological building materials among other green building related topics. Earth Pledge's NYC office concentrates on sustainable agriculture and architecture, with a

[91] New York City Housing Partnership, "High Performance Building Program," http://www.nycp.org/HPBP.htm

robust focus on green roofs. The Green Roofs Initiative educates the public and the building trades with workshops and symposiums, plays an advocacy role in promoting green roofs by educating city and state agencies and engaging them in discussions regarding the large-scale issues that green roofs can mitigate, and consults and facilitates for both non-profit organizations and private firms.

Currently Earth Pledge is developing a fund to offset the initial costs related to green roof implementation. Earth Pledge is also working with Columbia University's NASA-Goddard Labs and engineering firms to assess whether government support of green roofs could alleviate the economic pressures related to stormwater runoff and the urban heat island effect.

Three other NYC non-profits are promoting green building through education and communication. O2, a network of professional designers, students, and members of many related fields, strives to foster environmental sustainability through design. The O2 New York City Chapter members meet once a month to discuss issues and network with each other. O2 also hosts guest building design speakers. Currently, the organization is sponsoring an exhibit, Assignment Green, at the NYC Municipal Arts Society, to showcase sustainable planning, architecture, and product design projects from area universities.

The Community Environmental Center (CEC) is another non-profit professional organization in NYC. Through education and technical assistance, CEC aims to assist New Yorkers in achievement of healthier, more affordable lives by improving their home and community environments.[92] With a staff of over 40 trained professionals, the CEC leverages state energy efficiency programs to provide cost-effective maintenance, install energy saving retrofits, and implement energy management of single-family homes, multi-unit homes, and apartments. In addition to the technical support, CEC has created educational programs. The CEC Learning Center teaches children and adults how buildings work and how to protect natural resources. The interactive model Eco-House allows people to

[92] Community Environmental Center, "Programs and Services," http://www.cecenter.org/.

see behind walls, under floors, and into heating and water systems to better understand their operations. CEC also provides workshops and training for community organizations and a variety of classes for adults.

GreenHome NYC is a new organization run by volunteers that also attempts to reach residents. GreenHome gives short presentations on green building to small businesses and residents. It aims to introduce tenants, coop members, and apartment owners to the idea of green building and the various strategies for existing buildings. Once a month, the volunteers host open-public meetings with guest lectures from industry experts. GreenHome plans to create a "Green Building Green Map" for NYC and possibly a green materials purchasing program.

Unlike the previous three organizations, NY Wa$teMatch does not concentrate on development, operations, and maintenance of buildings, but rather focuses on garbage. Wa$teMatch is the City's materials exchange and waste reduction technical assistance program. The staff matches waste generators and potential material reusers so that generators can save on their disposal costs and reusers can save on the purchase of materials. Was$teMatch also assists companies ranging from manufacturers to construction companies by helping them reduce waste in their on-site processes.[93] The program is part of the Industrial and Technology Assistance Corporation (ITAC), an economic development organization that provides business management services, technical assistance, and programs to manufacturing and technology firms in New York City to help them become more profitable and competitive.

Each of these organizations combines economic, community, and environmental consideration into their mission. The Urban Nature Center, while not specifically involved with green building or any of its strategies, is an attempt to integrate the built, urban landscape and the natural environment. William Shore, a professor at New York University, established the Urban Nature Center in 2002 to create

[93] NY Wa$teMatch, http://www.wastematch.org/index.html.

an umbrella organization for urban, environmental research and projects. Sponsors and partners include the NYC Audubon, Brooklyn Botanic Garden, Columbia University/UNESCO Urban Biosphere Group, Fordham University Environmental Studies Center, New York Botanical Garden, NYU Wallerstein Collaborative and Institute of Public Administration, Wildlife Trust, WildMetro, Urban Biosphere Group, Brooklyn Botanic Garden, American Museum of Natural History, Wildife Trust, and the NYC chapter of the Audubon Society.

In addition to these consultants and advocates of green building in NYC, the Natural Resources Defense Council (NRDC) acts as a green building advisor for high profile developments. The NRDC works to move green building policies forward, persuade developers to develop green, form collaborate teams, and suggest emerging technologies. With an office in NYC, the national environmental organization is able to act as a model neighbor in NYC with its own green office space—a four-story build out above their co-op building. A major focus of NRDC's green building work is the education of building professionals. At first the NRDC targeted those professionals who were already committed to environmental issues. Next, the NRDC hopes to seek out and educate people who have heard of green building, but who are still not very familiar with it and are not committed enough to do the research on their own.

Habitat for Humanity—NYC, an independent affiliate of the international non-profit builder of affordable housing, has joined New York's green building movement, as well. In March 2003, in the Mott Haven section of the South Bronx, the development organization broke ground on its second energy efficient residential development in NYC after a successful development in Brooklyn. This is Habitat for Humanity's third development in the Bronx. Since 1984 Habitat has fostered community sustainability by prioritizing, training, and empowering local families to preserve their neighborhoods. Correspondingly, it relies on community groups, local churches, and businesses to help select families, raise funds, and review architectural plans for new developments. The

selected families and volunteers further strengthen communities by what Habitat calls "sweat equity," participation in the construction of new homes.

Clean Air Communities (CAC) and the New York City Environmental Justice alliance also seek to foster community engagement and empowerment through the promotion of healthier and just communities. CAC is an alliance of the NRDC, DEC, Con Edison, the Northeast States Clean Air Foundation, and the Northeast States for Coordinated Air Use Management to implement air pollution reduction and energy efficiency strategies in environmental justice communities in New York City. The CAC's Advisory Board of community groups, including Nos Quedamos and the South Bronx Clean Air Coalition, academic institutions, environmental and public health advocates, and government regulators, work to further community environmental justice goals by providing program direction, assisting with program outreach, and designing potential clean air strategies. The New York City Environmental Justice Alliance is a citywide network of professional environmental advocates, attorneys, scientists and health specialists who provide resources to support community-led initiatives for environmental justice. The advocacy alliance also fosters communication among these grass roots organizations, low-income neighborhoods, and communities of color.

In addition to the breadth of building professionals, New York City has a plethora of respected institutions of higher education that have various academic programs relating to architecture, planning, design, engineering, public health, and policy. Already, a few of these programs are working with community groups to research and further green building initiatives. In the spring of 2003, the Municipal Arts Society and O2 hosted an exhibit called "Assignment Green," which highlighted some of the sustainable design, industrial ecology, green architecture and planning courses at area universities. Participant programs included Cooper Union's Planning Department; Parsons Schools of Design's Department of Architecture, Interior Design, and Lighting; Fordham University's Environmental Studies Program; Pratt Institute's PICCUD; City College of New York School of Architecture, Urban Design, and Landscape Architecture; and

Columbia University's Graduate School of Architecture and Planning. The Wagner School of Government at New York University also has courses and research that promotes green design. Faculty of these programs believes that education is a major step towards changing the design industry. They hope to churn out green design expert from their schools to work as an economic force in the building industry. While the number of green design related courses is relatively small, the demand for these classes is growing and consequently more will follow. Partnerships with non-profit organizations such as Earth Pledge, Nos Quedamos, and Sustainable South Bronx bring the power of their research and education to the greater city.

Green Architects, Consultants, and Developers

Many of the nation's leading green building architects, consultants, and developers work in New York City. All the firms listed below have collaborated with state, city, and local entities to implement green building. Their roles in New York's industry-led green building movement continue to be significant.

TABLE 3.6
PRIVATE, FOR-PROFIT FIRMS

FIRM	TYPE	PROJECT
New Civic Works	Consultant	Hillary Brown- NYC High Performance Building Guidelines
Steve Winters and Associates	Consultant	Green Building Tax Credit, Sunflower Way, 1400 on 5th,
Jonathan Rose & Companies	Developer	Engages in green developments around the country and has an office in NYC
Albanese Development Corporation	Developer	Battery Park City's *The Solaire*
Durst Organization	Developer	4 Times Square
Full Spectrum	Developer	1400 on 5th
Less Bluestone	Developer	Sunflower Way
Claire Weisz + Associates	Architect	Bronx Boathouse plans
Fox and Fowle	Architect	4 Times Square and BPCA High Performance Building Guidelines
Kiss and Cathcart	Architect & Consulting	BPCA High Performance Building Guidelines
Flack + Kurtz	Consultant	National Audubon Society Headquarters and BPCA High

		Performance Building Guidelines, Bronx Criminal Court Complex
Balmori Associates	Landscape Architect	LI City "Green" City green roof plans
GreenStreet Environmental Construction	General Construction, Construction Management	The High-Performance Townhouse Project in Fort Greene, Brooklyn, The Earth Pledge Green Roof Project, The First Residential Solar Electric Installation in NYC

Conclusion

New York State has shown great initiative towards promoting green building with the governor's leadership and NYSERDA's funding. In addition to the state's leadership, the three primary energy service providers in New York City and an array of building professionals, both in profit and not-for-profit organizations, are pushing NYC into the forefront of green building activity in the nation.

Conversations with staff in various city agencies show that some interest exists at the city-level to further promote sustainable building, especially with the Departments of Housing Preservation and Development, Design and Construction, and the New York City Economic Development Corporation. DDC's contribution with the Office of Sustainable Design's High Performance Building Guidelines provides a foundation for greater green building initiatives in the future. The City Council, the New York City Economic Development Corporation, and the High Performance Building Initiative are hoping increased research will help the City find the best route to mainstream green building and move towards sustainable development. To date, however, the City does not have a comprehensive green building program to facilitate communication, education, and implementation. Leadership from the Mayor's Office and EDC for a green building program would an effective method to ensure "buy-in" from the business community and the other city agencies with the help of EBA and CEC outreaching to businesses and communities, respectively. At the same time, more coursework related to green design and sustainable communities are necessary to prepare future professionals to push designs to a greener, more sustainable level.

Of the organizations above, NYSERDA, Steven Winter Associates, and the housing organizations, HPD, New York City Housing Partnership, and Habitat for Humanity, are having the greatest impact on green building in the South Bronx. These organizations took advantage of The Bronx's high rate of housing construction to introduce energy-efficient, high-performing buildings to the borough and provide better housing options for its residents. Housing development, which continues to be the base of community revitalization, offers the opportunity to apply green building practices at a greater scale and to a higher level of "greenness." To do so, however, requires additional support from these and other organizations. In addition to housing, DDC's High Performance Building Program brings sustainable building to public projects in the South Bronx, but no group attempts to reach the commercial, private development in that area. Given the new commercial activity growing in the South Bronx, described in Chapter 2, neglecting to outreach and support private development, especially in the empowerment zones where extra assistance is necessary with or without green building, is a missed opportunity to improve the infrastructure, economy, environment, and health of the neighborhood. Given the extent of the devastation in the South Bronx and its subsequent effects on residents, establishing a strong support system and foundation for healthier, better quality development in the South Bronx, demonstrates the possibility and provides an effective model for success in other areas of the City.

It is crucial to build New York City's capacity to promote green building in the South Bronx and all other communities. Neighborhoods such as the South Bronx depend on greater public and outside assistance to improve their sustainability. The South Bronx does have some capacity to promote green building, however. With the support of state, city, and private programs, South Bronx officials and organizations can improve their own capacities to promote green building and more effectively improve the sustainability of the neighborhood.

CHAPTER 4

VISION FOR SUSTAINABLE DEVELOPMENT IN THE BRONX

State and city organizations contribute to the rebuilding and greening of the South Bronx with their public projects, energy efficiency programs, and technical resources. However, The Bronx Borough's officials and communities are taking the lead in ensuring sustainable development occurs within their own boundaries. The South Bronx continues to emerge from devastating social, economic, and environmental conditions in large part due to the community's realization of its own power and public financial support. As its "All America City" designation helps to demonstrate, The Bronx is a model of community development. The ability to organize to promote green building along with leverage of other existing, yet often underused tools and strengthened city and state partnerships, create potential for even greater sustainable community planning.

Planning occurs on many levels in the borough. NYC's Department of City Planning has a Bronx office, the Bronx Borough President's Office has a planning office, and community groups are beginning to realize the potential of their own community plans. However, private developers continue to have a significant say in the shape of developments in The Bronx, as the borough is eager to receive any investment after decades of disinvestments. What tools do the various Bronx and South Bronx organizations have to ensure they continue to attract development while they sustainably rebuild their communities?

Bronx Government

The Bronx Borough President, Adolpho Carrión, Jr., has been busy breaking ground and cutting ribbons at the South Bronx's most recent energy-efficient developments. His role in promoting sustainable developments runs deeper than those ceremonial duties, however. It is an integrated part of his plans for the borough as his economic plan for the borough reveals. In the report, "The Bronx County Comprehensive Economic Development Strategy 2002," Carrión, as well as Congressman Jose Serrano and the Bronx Overall Economic Development

Corporation, includes sustainability as a borough priority. In fact, each of the leaders' six visions for The Bronx in the report contains an element of sustainability:

- "Achieve economic development without sacrificing the public's health
- Provide businesses with a well-trained, committed and diverse workforce and workers with fairly paid, safe, secure and meaningful employment
- Foster and enhance the creation of services that add to the quality of life of the borough, by celebrating the diverse cultural heritage of its inhabitants
- Encapsulate a vision of sustainable development that fosters economic opportunity in, and enhances the natural and residential environment of the Bronx's 61 unique neighborhoods
- Result in the innovation of new products and services that address complicated urban problems
- Encourage the use and improvement of the Bronx waterfront"[94]

The Borough President has created task forces to carry out some of these visions. These task forces embody the goals and principles of sustainability—economic, community, and environmental health through integrated, local processes. For example, to carry out the last vision, Carrión recently created a Waterfront Task Force, which addresses access, economic development, waterborne transportation alternatives, and protection of natural areas, parkland improvement and expansion, and marshlands and bird and wildlife sanctuaries.[95] He has also initiated the Hunts Point Task Force for residents, business community and local leaders to collaborately create a comprehensive development plan for Hunts Point section of the South Bronx. The plan will strategize on how to remove polluting truck traffic from residential streets, create access to the proposed Bronx River Greenway, and make investments into the infrastructure of the area to create a safer, more attractive, and more sustainable area for residents. The Borough President emphasizes the importance of such investments in his 2002 State of the Borough Address: "All the wonderful economic development projects I discussed can only work when they are combined with affordable housing in safe, clean and healthy neighborhoods."

[94] Bronx Overall Economic Development Corporation 20.
[95] Carrión, Jr.

Along with task forces, Carrión has launched other sustainable initiatives. The Bronx Clean Up Your Neighborhood Day is an attempt to improve the environmental quality and community pride of Bronx neighborhoods, while also making it more attractive for economic investment. Participants will include the Bronx's 12 community boards, churches, block and merchant associations, the NYC Departments of Sanitation, Parks, Environmental Protection, and Education as well as a new charity for Bronx children. He also plans to work with the New York Power Authority (NYPA) and Governor Pataki to green residential and industrial areas around the borough. "We will fund recreation, education and wellness programs and create an incentive for businesses and residential developers to purchase technologies that promote energy efficiencies and offset pollution in our neighborhoods."[96]

According to Paula Caplan, Deputy Director of Planning and Development at the Bronx Borough President's Office (BBPO), green building is a priority. Whenever the BBPO is part of a development process, the office uses its influence to attempt to promote green building. The office directs developers to websites and other resources about green building. However, the extent of their technical assistance is minimal, and therefore, they have not had much success in their attempts.

The Bronx Overall Economic Development Corporation (BOEDC) is an office under the Bronx Borough President's Office structure that also attempts to promote green building. While the New York City Economic Development Corporation has the potential to be the lead promoter and administer of citywide green building programs for the city, the BOEDC may be able to play the same role for the Bronx. To do so, the BOEDC will need the help of educational resources, financial tools, and local administration capabilities of state and federal programs.

[96] Carrión, Jr.

BOEDC is already a promoter of sustainable development in The Bronx. In addition to economic development, the office made improving the South Bronx's outdoor air quality a priority. BOEDC staff has been working with the State Department of Transportation to bring an ethanol diesel program to Hunts Point as well as other natural gas facilities. To reduce the impact of truck traffic on the area's air quality, BOEDC supports plans for industries to switch to freight ferries for their deliveries. The office is also rallying with the Bronx Borough President's Office and other organizations to create an accessible greenway along the borough's waterfront to decrease contaminated run-off into the rivers and increase urban environmental awareness. BOEDC has plans to attract manufacturers of green products to the borough and to help local institutions purchase more environmentally friendly products, as it did for Montefiore Hospital. In term of green building, it is currently working with New York City's Economic Development Corporation (EDC) and the developers of the Fulton Fish Market at Hunts Point in an attempt to green this new facility.

BOEDC's financial tools offer the potential to further influence local businesses to incorporate green and sustainable practices. The BOEDC offers low-mortgage loans to businesses in the borough's empowerment zones and oversees the borough's Business Improvement Districts (BID). The office markets itself as a "one-stop resource center for business and industry in the Bronx," and as such, has the potential to educate a large audience of local businesses. Additionally, BOEDC has a progressive staff interested in promoting more green development.

Community Planning

The first green development in the borough, Sunflower Way in Melrose Commons, is partially a result of a large-scale community planning process. In the planning of the Melrose Commons Urban Renewal Area, residents who were unhappy with the City's plan for the area decided to create their own to better reflect their needs. In the mid 1990s the mayor approved the Melrose Commons

Urban Renewal Plan. This plan was a component of the community-based, volunteer planning effort called the Bronx Center Project. According to The Bronx Center Project's final report, "Effective and meaningful planning must be the product of a "bottom up" community-based process. Planning based on this principle holds the most promise for long-term benefits for all members of the community."[97] In other words, community participation is necessary to foster sustainable communities.

The Bronx Borough President launched the Bronx Center Project process in 1992 to propose economic and physical strategies to revitalize a 300-block area of the South Bronx between 147th and 165th Streets and the Harlem River and St. Anne's Avenue. The collaborative process included contribution from LSGS Architects, Nos Quedamos, the Department of Housing Preservation and Development (HPD), the Bronx Borough President's Office and Community Boards 1 and 3. Together, the Project's participants established guiding principles and proposed strategic projects to enhance economic development, health and human services, education and culture, transportation, and housing, open space and urban design in the study area. These principles and recommendations set the stage for the recent green developments in the Melrose Commons Area. In particular, the Housing, Open Space, and Urban Design section of the report emphasized the importance of prioritizing current residents and public participation. More specifically, the Project's Urban Renewal Plan for Melrose Commons called for mixed-use and income housing for area residents and mandatory design controls to set high architectural and design standards. Similar to the green building approach to development, the Bronx Center Project's approach to planning stressed that it must be interdisciplinary, comprehensive and integrated at every stage.[98]

Prior to the Bronx Center Project, the City Planning Commission approved a 197a plan for Bronx Community Board 3. 197a is a provision in the New York

[97] The Bronx Center, "THE BRONX: A report to Bronx Borough President Fernando Ferrar from the Bronx Center Steering Committee" (May 1993) 16.
[98] The Bronx Center 16.

City Charter, also called the Charter for Community Empowerment, which allows community boards and residents to participate in plans for the "development, growth and improvement" of their communities. The 197a plan for Community Board 3, "Partnership for the Future," was the first 197a plan approved in New York City. In it, the community board set out goals and strategies to improve the economic, social, and environmental fabric of the neighborhood through housing, open space, job training, health services, public safety, sanitation, infrastructure, and transportation recommendations.

According to the Department of City Planning (DCP), the 197a plan and the Bronx Center Project have played a role in the development of recent construction projects. In particular, these plans guided the site selection for the new Bronx Criminal Courthouse, the development of Hostos Community College, and the creation of the High School for Law and Justice as well as DCP's proposed rezoning of 161st to mixed use.

As of 2000, the City Planning Commission approved only three other 197a plans: Red Hook in Brooklyn and Stuyvesant Cove and Chelsea in Manhattan. Very few communities have even submitted a 197a due to community inexperience with planning, the lengthy review and approval process, and the lack of legal backing to support the plans.[99] In most boroughs, the Department of City Planning does not provide direct assistance in the preparation of 197-a plans, and most community boards do not have the personnel or funds to undertake multi-year planning efforts on their own. It is still not certain what impact green building recommendations would have in the development of the 197a plan neighborhoods.

Within the Bronx, other community planning projects are underway. As mentioned above, Borough President Carrión initiated a Waterfront Revitalization Task Force. Community Board 4, which borders Board 3 and includes Yankee

[99] Thomas Angotti. Pratt Institute Center for Community and Environmental Development, "New York City's '197-a' Community Planning Experience: Power to the People or Less work for Planners," http://www.pratt.edu/picced/advocacy/197a.htm

Stadium, Borough Hall, and the new green Bronx Criminal Court Complex, is looking to develop their own Civic Center Plan with the help of the Borough President.

Community Development Corporations

Community Development Corporations prove to be powerful forces in urban development and show signs of the same capabilities for furthering green building practices. There are numerous community groups in the South Bronx involved in housing development, environmental justice, environmental conservation, education, job training, health services, and the arts among other things. The recent history of the South Bronx, as mentioned in Chapter 2, demonstrates the ability of community organizations to organize, secure funding, and develop housing, even when the City cannot. Many of these groups are becoming sustainable development and green building advocates and experts.

Nos Quedamos/We Stay is the community group most associated with green development. As part of the Bronx Center Project, it began as a committee of residents dedicated to organizing and planning Melrose Commons, the current home of the green Sunflower Way developments. (The first one is completed and the second is under construction.) Nos Quedamos' green influences have been even greater on their other developments. Yolanda Garcia, the founder and executive director of Nos Quedamos, labors to ensure that the Melrose Commons developments are more than energy efficient; she demands that they are healthy and well designed. For example, La Puerta de Vitalidad is a 61-unit affordable housing project with a sophisticated ventilation system that includes two large chillers on the roof to pump fresh air into the halls of each floor every hour of the day. She believes that building design needs to put humanity first and establishes that as the guiding principle for Nos Quedamos projects. These and other green development practices are part of the organization's strategy to design a "livable city." According to Garcia, "We want to achieve sustainable

development. That will be our legacy to our children."[100] She believes healthy, well-designed buildings are one way to achieve this, as is the feeling of community ownership these buildings provide. In addition, Nos Quedamos educates new homeowners on building maintenance and provides information on recycling and energy efficiency.

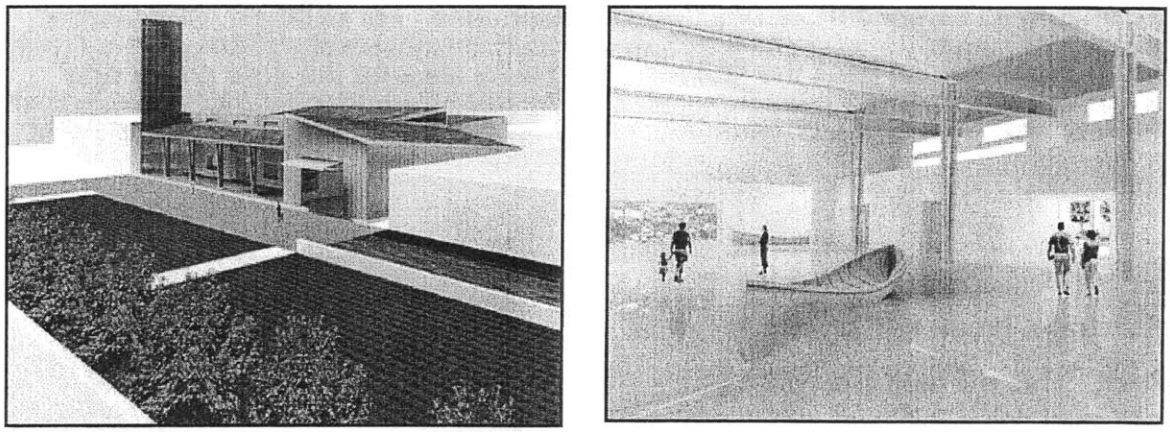
Another community organization in the South Bronx believes in putting people first to achieve sustainable, livable communities. The Point Community Development Corporation (CDC) in Hunts Point aims to "work with our neighbors, especially our young people, to celebrate the life and culture of our community."[101] The CDC's mission is to encourage the arts, local enterprise, responsible ecology, and self-investment in the community through youth development programs, arts and music education, studio exhibit space for area talent, environmental stewardship and water recreation programs, small business and nonprofit incubation, and other community services. The Point's current projects foster the social, environmental, and economic aspects of sustainability and they have plans to do even more.

In partnership with the Bronx Museum of the Arts, Lehman College of the City University of New York, the Maritime College of the State University of New York, and Rocking the Boat, a non-profit community boat-building program, The Point CDC is developing the Bronx River Boathouse. Claire Weisz and Associates and Work-in-Progress Associates, LLC provide additional technical support. The boathouse will house exhibit space, offices, educational facilities, and recreational amenities as well as offer access to the Bronx River and the proposed Bronx Greenway. According to Paul Lipson, Executive Director of The Point,

> "The theme of the Bronx Boathouse and all our work is to show the synergies between arts and the environment. We want to promote the identity of Hunts Point and show it is progressive and moving towards sustainable development. We want the Boathouse to be visible from the highway, in the skyline of the area. It is symbolic of

100 Sustainable Communities Network Partnership.
[101] The Point Community Development Corporation, http://www.thepoint.org.

the work going on in Hunts Point...We want it to be a national model."[102]



Figures 7 & 8: Outside and Inside The Point's Bronx River Boathouse, Source: Claire Weisz

The building will integrate many green elements to minimize its impact on the river and the community. Lipson proposed a green roof to ensure that stormwater did not collect contaminants from the streets, buildings, and waterfront brownfield sites and further contaminate the river. To mitigate the building's burden on New York City's septic system, which at times overflows and pollutes the river, Lipson recommended the use of graywater toilets as well as other resource efficient strategies. The proposed site for the boathouse, a brownfield, is in the process of preparation for development. Although The Point has not yet secured funding for the project, they have hopes that federal grants will contribute largely to the endeavor. As stated by Paul Lipson, reflecting on the uncertainty around the project's future, "The boathouse will be a gorgeous place if ever built."

Around the corner from The Point's current facility, Majora Carter, a former Point employee, is another proponent of green. She believes green building can be a "galvanizing rod" to do sustainable development within the community. The name of her organization, Sustainable South Bronx, encompasses its vision and mission. Sustainable South Bronx is an environmental justice organization that aims to rebuild the social and natural capital of the South Bronx while establishing new economic capital at the same time. Instead of merely reacting

[102] Paul Lipson, Executive Director, The Point CDC, personal interview (24 March 2003).

to environmental injustices, the organization endeavors to empower the community to demand more healthful developments. For example, Sustainable South Bronx helped pass the first anti-idling truck laws for the area and is now working with Clean Air Communities, NYPA, and Con Edison on the Hunts Point Truck Stop Electrification Project.

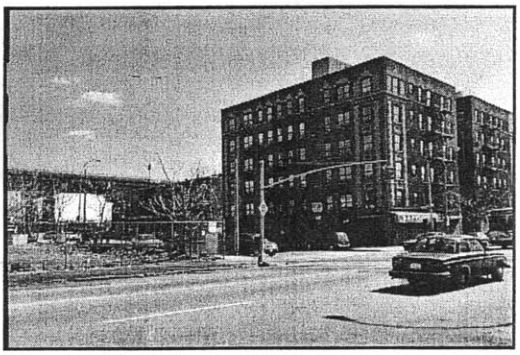


Figure 9: Proposed site for green roof project near Bruckner Expressway

Sustainable South Bronx is currently planning a green roof project in Hunts Point. This will be the organization's first green building initiative, although its office does have many green elements. The green roof project is in collaboration with Balmori Associates, the firm working on Long Island City's green roofs initiative. Columbia University's Department of Public Health is another partner, which will study to what extent, if any, green roofs can mitigate the negative health effects surrounding the community. This is especially appropriate in this community given its elevated asthma rates. Similar to her colleague at the Point, Ms. Carter highlighted the storm water management ability of green roofs and its cost benefits in comparison to the City's plan to invest $1.5 billion to fix combined sewer overflow problem and other wastewater infrastructure improvements.[103] Both Ms. Hunt and Mr. Lipson hope the absorptive capabilities of green roofs will lessen the flow and quantity of stormwater runoff into nearby waterways.[104] In other words, green roofs may be a cost-effective pollution prevention measure compared to the end-of-pipe solution reminiscent of past environmental policies.

Further inline with the new era of sustainable development initiatives, the green roof project will have community and economic components to it. As a large, high profile project, visible from the well-traveled Bruckner Expressway, the roof will tackle the neighborhoods stigma of garbage, dirty industry, and blight. The

[103] Tom Lipton, Presentation: "Greening Gotham's Roofs," Earth Pledge Foundation (23 November 2002).
[104] Earth Pledge in partnership with Columbia University and NASA-Goddard Labs is researching the physical and financial extent of green roofs' ability to mitigate stormwater runoff.

long-term vision of the green roof project is to form a carpet of green roofs along the Bruckner and throughout the neighborhood, to create a Hunts Point "sense of place" for residents and passerby, and to spur workforce development. Sustainable South Bronx is in the process of creating Ecological Workforce Development, a project to train interested community residents how to protect their river. There are plans to eventually extend the training to green roof installation as a way to introduce the community to sustainable development and green roofs. Given the unemployment rate in the area and the number of large, flat roofs in the South Bronx, SSB firmly believes this is a great match.

The project team is early in its design process with many uncertainties remaining including funding and feasibility. In the meantime, SSB is busy with two other projects in particular that are strengthening the community's voice. The Sheridan Expressway project is a community-based planning effort to create alternatives to the $500 million expansion plan for the highway. This artery currently restricts the community's access to the waterfront. The Bronx Greenway, mentioned by the Borough President and the Point CDC, is a plan to create a green, open space around the tip of the South Bronx. The key to both programs is to connect environmental improvements with economic development. For these and other projects, SSB receives technical resources from the New York Lawyers for Public Interest, Pratt Institute, the Urban Justice Resource Center, and the New York Environmental Justice Alliance.

Environmental justice concerns around a regional medical waste incinerator led to the formation of the South Bronx Clean Air Coalition. Over a decade later, the organization continues to fight to improve the quality of the South Bronx's air, both indoor and outdoor. Marian Feinberg, one of the two full-time staff members, has become familiar with various aspects of green building as they relate to indoor air quality; specifically CCA treated wood for playgrounds, green cleaning materials, and integrated pest management. She attends meeting for both Healthcare Without Harm and the Healthy Schools Network green building groups. Since the organization is not a development corporation, it has not had

involvement in any green development. Regarding buildings, it mostly deals with issues around lead poisoning, mold, and asthma. "I see it as a continuum," explains Ms. Feinberg, "I think people need to live, work, and play in healthy structures. Some aspects have to do with the building design and others with how they are used and maintained. No one part is more important than others."

While the South Bronx Clean Air Coalition works towards improving air quality, the Bronx River Alliance works towards improving and restoring the Bronx River Corridor and greenway "so that they can be healthy ecological, recreational, educational and economic resources for the communities through which the river flows." Similar to the other community organizations in the South Bronx, the Bronx River Alliance values environmental justice, community empowerment, and sustainable development. The organization also attempts to practice what it preaches through recycling programs, the use of green products, and the promotion of green design to reduce pollution along the river and the surrounding communities. The Alliance also aims to ensure that all proposals for development along the Bronx River adhere to its principles of sustainability and community empowerment.

Other grassroots organizations, including the housing development corporations and the South Bronx Community Development Corporation (SoBro), contribute to the sustainability of the neighborhood by creating homes, fostering business development, and promoting overall stability in the area. These include the following housing organizations in the South Bronx:

- 163rd Street Improvement Council
- Bronx Shepherds Restoration Corporation
- Association For Intercultural Affairs
- Inter Neighborhood Housing Corporation
- Aquinas Housing Corporation
- South Bronx Community Management Corporation
- South Bronx Churches
- Phipps Community Development Corporation

- MBD Community Housing Corporation
- We Stay/ Nos Quedamos
- SEBCO Development Corporation
- South Bronx Community Corporation
- South Bronx Overall Development
- Banana Kelly Community Improvement
- P.R.O.M.E.S.A. HDFC
- WHEDCO

Green Buildings in the Bronx

One of the most powerful tools the South Bronx has to fulfill its visions of sustainable development is its set of green building models. While Sunflower Way is the only completed green building development in the South Bronx, a few others are under construction, including the Bronx Criminal Court Complex and a second Melrose Commons development. These developments show it is possible construct green buildings in the South Bronx and provide precedence for future developments to follow. Lessons from these developments also contribute to green building projects in similar neighborhoods throughout the City.

Throughout this thesis I have often mentioned Sunflower Way in Melrose Commons. It is the ultimate example of community planning, collaboration, and affordable green development. Sunflower Way II is a $12 million, 90-unit multi-family housing project, featuring first-floor duplex apartments and second- and third-floor single-story flats. This complex of 30, three-family, affordable housing units is specifically for first-time homebuyers. The project team designed and obtained financing for these homes to ensure their affordability for families making as little as $42,000 a year. On average, each home costs $289,000.

Figure 10: Sunflower Way II,
Source: Steven Winter Associates

Building America's Consortium for Advanced Residential Buildings (CARB) and the Seavey Organization team partnered with the New York City Housing Partnership for this project. As part of the Building America program, each three-family unit is an Energy Star® home. In fact, it is the first affordable housing development in New York to earn the Energy Star® Home label from the US Environmental Protection agency and the New York State Energy Research and Development Authority. In March, The Northeast Sustainable Energy Association's (NESEA) awarded this development First Place Residential in recognition of its high performance and architectural form. A second Melrose Commons development, Sunflower Way III, is under construction.

The Department of Design and Construction (DDC) has two projects in the South Bronx that are a part of its High Performance Building Program. The largest by far is the Bronx Criminal Court Complex. The NY State Dormitory Authority is working with the design team of Rafael Viñoly Architects, Flack + Kurtz Inc, and Steven Winter Associates to build this 750,000 square foot, $239 million dollar, high profile development. Although the developers added the green elements to the design late in the process, there was still great emphasis on maximum daylighting, healthy indoor air quality, and thermal comfort.

On a smaller scale, DDC and the Agency for Child Development are developing the Seabury Day Care Center with green elements, as well. Steven Winter Associates this time is working with BKSK Architects, LLP and PA Collins, PE to design space that is optimal for the education and health of children. The green design elements include a passive/recreational courtyard with native species planting, north and south orientation for efficient natural ventilation and maximum daylight, and low Volatile Organic Compound (VOC) building materials and furnishings.

Habitat for Humanity's third development in The Bronx is its second Energy Star® project in New York City. The non-profit building organization broke ground in March for thirteen new semi-attached, single-family homes in the Mott

Haven section of the South Bronx. As described in Chapter 3, this project is a part of HPD's New Foundations homeownership program. Sale prices of the homes range from $100,000 to $130,000 and each family must invest "sweat equity" into the construction.

Figure 11: Casa Del Sol Renovation
Source: Green Street Environmental

The South Bronx also has an example of a green rehabilitation project. Green Street Environmental Construction's Casa Del Sol project entailed renovation of an abandoned multi-family residential building. The renovated structure is now a multi-cultural community and arts center.

Conclusion

Congressman Jose Serrano and Bronx Borough President Adolpho Carrión both have visions for sustainable development in The Bronx and continue to support programs that further them. The Borough President has made sustainable development a priority and this level of buy-in has proven to be an effective tool to support sustainable development initiatives in the borough. Local grassroots organizations, with the help of citywide organizations, universities, and the state, are responsible for the creation of these initiatives.

Based on prior successes, the opportunity exists for greater community planning, sustainable visioning, and green building in the South Bronx. Even with better employment of these community tools, however, many factors prohibit green building in the South Bronx from occurring on a large scale. As President Bill Clinton said during his visit to Charlotte Gardens in 1997, twenty years after President Carter's infamous and devastating visit, "If you can do it here, you can do it anywhere." It is necessary to identify the prohibitive factors and mitigate their effects so that mainstreaming green building can occur here and everywhere.

Chapter 5

Capacity Analysis & Conclusions

The emergence of green building developments in New York City proves the capacity to promote green building exists, even in the South Bronx and other environmental justice neighborhoods. However, green building is far from mainstream and given the current infrastructure to promote green building, it seems unlikely it will be a ubiquitous occurrence anytime in the near future.

Findings

Chapter 3 summarizes the current green building and related programs that exist in New York State and City. The leadership of Governor Pataki and the staff at the New York State Energy and Research Development Authority (NYSERDA) have helped create the foundations for greater green building activity. The State has made energy efficiency, renewable energy, and new green industries priorities. NYSERDA has supported this leadership with financial incentives, technical assistance, and some education.

The state's leadership can be stronger. Executive Order #111, the "Clean and Green" legislation, does not enforce its green guidelines and standards, and therefore not all state entities comply. The governor has set admirable goals regarding energy efficiency and renewable energy, however his administration does not provide the tools to reach those ends. For example, the Public Service Commission, whose role is to set regulations for power in New York State, charges connection fees to distributive energy generators even if they do not rely on the grid for electricity. Distributive generation, which includes fuel cells and photovoltaic systems, are energy efficient and often use renewable energy sources. The connection charge is a disincentive to include distributive energy in building design.

NYSERDA has the strongest capacity to promote green building in New York. The authority continues to improve programs and strengthen its outreach. Until

this year, NYSERDA's programs have focused on high profile projects, such as Battery Park City's *The Solaire*. Programs targeting smaller residential developments and affordable housing tend to be significantly smaller than those available for the high profile developments. New products targeting smaller, residential developments have materialized this year, but it is too early too evaluate their successes. Still, NYSERDA only offers incentives to improve building envelope design for centrally cooled buildings, which is a rare occurrence in affordable housing.[105] There are no incentives to reduce gas usage for heating or domestic hot water in those buildings, either.[106] Additionally, it is difficult to keep track of various offerings the authority does offer. NYSERDA's website does not clearly advertise their programs or resources, and therefore New Yorkers do not take full advantage of them. Furthermore, local governments have little influence over NYSERDA's funding selections, making it difficult for small, local projects to receive financial support.

State agencies have effectively created partnerships with for and not-for-profit firms, strengthening efforts to promote green building. Multi-level and multi-organizational partnerships have been beneficial for all of those involved, allowing groups that would otherwise not engage in a green project do so. For example, NYSERDA worked with Steven Winter Associates to support Habitat for Humanity-NYC and MCII Associates to develop their first green affordable housing projects. Both Habitat and MCII have second green developments under construction. NYSERDA and Steven Winter Associates also partnered with New York City Housing Partnerships and Nos Quedamos Community Organization for the Sunflower Way developments. It is unlikely these Department of Housing Preservation and Development (HPD) projects would have been green without the partnerships. More collaboration is necessary to push the movement further. For example, NYSERDA and HPD would benefit from more collaboration to improve the quality of all affordable housing in the City, which is a particular concern in the South Bronx and similar neighborhoods.

[105] Andrew Padian, Consultant, Steven Winter Associates, e-mail correspondence (7 May 2003).
[106] Padian.

Other NYSERDA partnerships could help promulgate these practices to small businesses and building rehabilitations

Various agencies within New York City government show interest in green building; however, the city has yet to show true leadership promoting its sustainable practices. Its capacity mostly stems from the Office of Sustainable Development in DDC, which has established great precedence for high performance and innovative building in the city. DDC has tested new technologies, educated each client agency on green building, and has engaged stakeholders in the green building process. The office has also spread their green projects in neighborhoods throughout the boroughs including Kensington/Borough Park, Brooklyn, Flushing Park, Queens, Rikers Island, Lower Manhattan, and the South Bronx. This office has published lessons learned from their work to identify areas of potential improvements. The office's experience as well as its large construction budget offers it great capacity to further promote green building, including more projects in the South Bronx.

HPD is beginning to show interest in green building and now has precedence for it; however the agency's leadership has yet to fully "buy-in" to the concept. For each green development they pursue, they approve numerous other low quality and unhealthy ones, which use twice as much energy per square foot as those over fifty years old.[107] The office's challenges are significant given the magnitude of the City's housing shortage, the number of developments it must build or rehabilitate each year, and the constraints of a fiscal budget. However, they have more to gain by improving the requirements in their RFPs and specifications than they fully realize. HPD's full acceptance of the concept of green building would greatly increase the City's ability to mainstream it and ensure sustainable development for lower income groups

New York City Economic Development Corporation (EDC), the City's quasi-public development arm, is also in a great position to further green building

[107] Padian.

practices throughout the City. EDC currently acts as an information resource for the Bronx Borough President's Office and other agencies, however they do not provide this service on a large-scale. When possible the office does try to promote sustainable design, but does not have an institutionalized or successful way to do so. The office is responsible for the sale and leasing of city-owned land for economic development and for the redevelopment of city-owned waterfront properties. It is also the source for "Nearly 60 business incentives that can help [business] grow, including financing options, tax benefits and cost-saving energy programs."[108] They have the facility to reach high profile developers, small businesses, and other city agencies. The office, in conjunction with New York City Council, can greatly influence the green building movement in NYC with the creation of new financial, educational, and outreach programs.

Along with the top-down programs the state and city offer, local groups have demonstrated their capacity to promote sustainable initiatives in their communities, as explained in Chapter 4. Their ability to organize the community, create projects that reflect the communities' respective needs, and gain the city and media's attention has the potential to bring sustainable development to the forefront of local and regional agendas. While these groups are heavily constrained by financing, they have effectively partnered with governmental agencies and citywide organizations to procure the necessary resources. Congressman Serrano and the Bronx Borough Presidents Office's reinforce the grassroots capacity to further sustainability. More authority to distribute state funding and create green projects would allow Bronx leaders to further strengthen the capacity, as well as distribute green practices to small businesses and existing, unhealthy buildings.

While government and community efforts are important, economic markets still have the greatest influence over developments, and therefore market transformation has the most significant capacity to promote sustainable design

[108] New York City Economic Development Corporation Website: http://www.newyorkbiz.com/About_Us/index.html

practices. Transformation of the building materials and real estate market to realize the benefits of green building and the true-costs of standard practices would overcome most of the existing barriers. Signs of change exist with the increasing number of green building professionals and business-led workshops. However, the transformation has yet to occur, and most of these barriers remain.

Challenges to Mainstreaming

In *Bronx Ecology*, Alan Hershkowitz lists the current barriers to sustainability he encountered trying to develop a paper recycling facility in the South Bronx that adhered to the principles of industrial ecology. Among other things, he mentions complicated site characteristics; higher construction labor costs; higher water, effluent, and utility costs; and difficulty obtaining financing for environmental innovations and technologies. Although green building receives more support than Hershkowitz's paper mill did, proponents of it still face challenges.

Hershkowitz writes, "Our obligation to future generations requires that we openly discuss all barriers to sustainability."[109] Understanding these barriers allows us to create solutions to break them down and move forward. This is particularly true for green building barriers. As the developments in Battery Park City and the South Bronx exhibit, incentives, partnerships, guidelines, and other tools can help tackle the challenges and bring about green developments. Given the current level of energy around green building in NYC, it is a critical time to effectively deal with the barriers on a larger scale.

During my research I spoke to 30 people who contributed to green building in New York, and I asked them what barriers they encountered. Table 5.1 lists the people I interviewed and Table 5.2 summarizes the findings from these conversations. I was surprised by the general consensus of their answers, especially given the diverse institutions they represent. This chapter continues

[109] Hershkowitz 173.

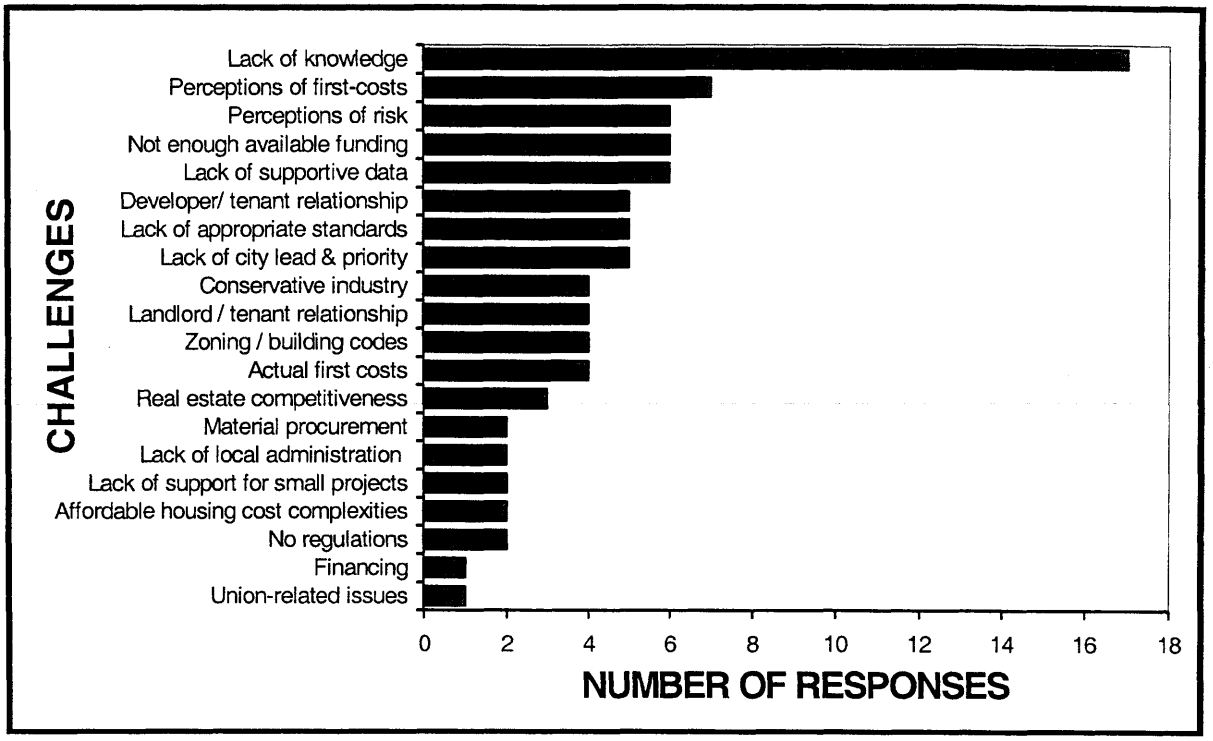
with a summary of my findings, both from the interviews and from my personal observations.

Table 5.1
Green Building Proponents in New York

INTERVIEWEE	ORGANIZATION
George Aridas	Albanese Development
Stephanie Gelb	Battery Park City Authority
Paul Caplan	Bronx Borough President's Office
John Krieble	Department of Design and Construction
Ted Weinstein	Department of Housing Preservation and Development
Eileen Popkin	Department of Housing Preservation and Development
Colin Cheney	Earth Pledge
Bomee Jung	GreenHome NYC
Kevin Sullivan	Habitat for Humanity
Steven Eber	KeySpan Business Services
Les Bluestone	MCII Associates
Nathanael Green	Natural Resources Defense Council
Robert Watson	Natural Resources Defense Council
Hillary Brown	New Civic Works
Russell Unger	New York City Council
Richard Miller	New York City Economic Development Corporation
Patty Noonan	New York City Housing Partnerships
Brian Warner	New York Power Authority
Allen Zerkin	NYC High Performance Building Initiative, NYU
Elizabeth Kerry	NYSERDA
Craig Kneeland	NYSERDA
Heather Clark	NYSERDA
Marian Feinberg	South Bronx Clean Air Coalition
Andrew Padian	Steven Winter Associates
Majora Carter	Sustainable South Bronx
Patrick Barnhart	The Bronx Overall Economic Development Corporation
Paul Lipson	The Point Community Development Corporation
Josh Rosenfield	Wa$teMatch
Yolanda Garcia	We Stay / Nos Quedamos

Table 5.2

Challenges to Mainstreaming Green Building



From the 30 interviews and the subsequent 88 responses, I identified twenty types of barriers to mainstream green building practices in New York City. Many of these challenges exist throughout the nation due to the infancy of the green building movement and existing economic markets. However, some challenges are more specific to New York City or lower-income neighborhoods. None of the challenges were exclusive to the South Bronx.

I categorized the barrier types into four categories: information, cost/risk, distribution, and leadership. I found that most of the challenges to mainstream green building interrelate; therefore, many of the responses have the potential to fall into more than one category. For example, misperceptions around green building can lead to higher cost assessments and contribute to barriers regarding both information and risk. For simplicity, however, I categorize each response once under its most relevant group.

Information

Out of the 88 responses I received from the interviewees, 41 percent dealt with information-related challenges. This category was by far the most prevalent. These responses take account the need to educate the general public as well as train architects, engineers, developers, and contractors about sustainable building. It includes the lack of familiarity with the principles and benefits of green building and the dearth of research and data supporting these benefits. Responses regarding "perceptions" of costs and risks associated with green building are under this category, as well.

The general public is unfamiliar with green building and its benefits. Most people do not make the connection between their everyday activities and their environmental consequences nor are they aware of the great impacts buildings have on the environment. Even fewer people know how to lessen those impacts. Demand for healthy and efficient buildings, although growing, is not universal due in part to the lack of information and false assumptions. People already familiar with green building are the ones who take the time to research it further. New York City does not have a website or an office that posts green building information and available resources in a manner that it is accessible to the unenlightened. The City's various environmental non-profit organizations do compile some of these resources; however, their target audiences are already environmentally conscious.

Much of the building industry is still unfamiliar with green technologies and the green building process. Even when individuals learn about green building and decide to move forward with a project, they find it difficult to obtain the necessary assistance. The disconnect between design professionals and available resources affects even "green" projects. DDC's Office of Sustainable Design published a memo on the lessons learned from their initial pilot projects. DDC and its consultants found that a design team's unfamiliarity with a green element

usually was the main reason not to include it: "The most common ground for eliminating a high performance feature is the concern that a nonconventional system's uniqueness or perceived complexity would further tax the agency's finite operating resources. For this reason, the more sophisticated the proposed system, the greater the perceived risk and the less its likelihood of incorporation."[110]

Most design professions are unfamiliar with the green building process, as well. Green building is a non-linear, holistic and iterative design and construction process. George Aridas, a developer with Albanese Development Corporation, found unfamiliarity with this process to be a prime challenge to promoting green building. Most architects, engineers and construction professions are comfortable with the linear approach where the architect drafts a design, the engineer adds the building system's to fit into the design, and the contractor builds according to their plans. These professionals often do not have the training or experience to work more collaboratively and iteratively, and therefore prefer to work in the manner to which they are accustomed.

There is a lack of research to convince design professionals and developers to change their ways. There are not many studies quantifying the lifecycle cost and health savings associated with green building, in part due to the limited number and infancy of green buildings in the United States. There is even fewer dealing with high performance affordable housing development. There is a need to look at the lifecycle savings, both to tenants and the City, of high performance buildings in comparison to the standard affordable housing the City builds. These studies need to look at more than just energy savings, but maintenance and replacement costs, as well. More research is also necessary to understand the feasibility and benefits of green roofs, photovoltaics, and wind energy throughout the City as well as the health and financial benefits of daylighting, non-toxic materials, and sophisticated ventilation systems.

[110] The City of New York Department of Design and Construction, "Implementing the High Performance Guidelines" (New York: September 2002) 18.

Seven interviewees mentioned "perceptions" of greater costs as a challenge, while only three claimed actual greater costs are. Without hard proof concerning costs and benefits, it is hard to squelch the misperceptions regarding them. The Bronx Borough President's Office encounters these whenever it tries to promote green building. According to Paula Caplan, the Deputy Director of Planning and Development, "The general public, including developers, has the perception that green building is more expensive, even when they are aware that in the long run they may recoup additional first costs through energy savings." The office does not have the expertise or resources to counter developers' concerns.

Public agencies are vulnerable to the lack of data and the misperceptions around green building costs, as well. The assistant commissioner for resource development at HPD claims, "green building costs more money and is too expensive." However, green building experts argue that sustainable design does not have to cost significantly more, especially if the building design incorporates green components early in the design process. DDC consultants find additional costs in NYC, on average, in the range of one to two percent, with smaller projects experiencing 5 percent increases.[111] Given HPD's limited annual budget and the lack of data supporting the long-term savings of green building, HPD is cautious with taxpayer dollars that would otherwise go to further relieve the City's housing shortage. However, the agency currently analyzes building costs component-by-component, as opposed to part of building systems, which results in more expensive development, as I will discuss in the cost/risk section. A better understanding and acceptance of green building in the agency would allow the inclusion of greener practices without significant cost increases. According to Andrew Padian, a consultant at Steven Winter Associates, HPD tends to oversize heating and domestic hot water systems. He further explains, "A small increase in window quality and wall insulation, a reduction of framing materials,

[111] The City of New York, Department of Design and Construction 16.

and properly sized high efficiency systems would be no-cost improvements that would reduce energy use by a minimum of 50 percent in these buildings."[112]

The information barrier is a surmountable one. NYSERDA, as well as other agencies, can easily update and clarify their websites with information on available funding and technical resources. Non-profits and universities are beginning to disseminate information about green building and both the City and State have plans to further research. The opportunity still exists for more institutionalized efforts to promulgate green building education in New York City, including on the community level. Programs that target and engage communities in green building discussions would further breakdown this barrier and increase the demand for green developments.

Cost / Risk

According to George Aridas, "As the cost of green comes down, and it will, there will be less risk. Once you take away risk, pricing comes down."[113] Cost and risk have a reciprocal relationship, and I have therefore grouped them together. This category also encompasses barriers related to green materials and real estate market conditions. Responses in this category include the need for more available funding, the dynamic of the competitive real estate market, the conservative building industry, the difficulties of material procurement, challenges to secure financing for green developments, and labor union jurisdictional issues. Nearly 24 percent of the responses fall into this category, making it the second biggest challenge after information in this study.

Higher costs have the potential to deem green building a less attractive option in a competitive market, render a project prohibitively more expensive, or increase the already high level of risk associated with development projects. The assistant commissioner at HPD offered procurement of double-glazed windows

[112] Padian.
[113] George Aridas, Senior Vice President, Albanese Development Corporation, phone interview (13 January 2003).

as an example of all three of these outcomes. She explained that of windows each cost $100 more than conventional windows then the installation of 1000 of them will cost the developer $100,000 extra for windows alone, and consequently HPD will have to increase its loan to the developer. While higher quality windows are not necessary $100 more expensive, her point is still clear.[114] She believes investing in more expensive windows means HPD can build or rehabilitate fewer homes, and it is therefore taking a greater risk with a larger loan. According to the assistant commissioner, "It is a bottom-line dollar issue."[115] If costs were equal or financial incentives equalized the cost differential, the agency would probably choose the proven better performing, resource efficient, and healthier products.[116]

Six interviewees mentioned more financial assistance is necessary to equalize cost differentials and persuade developers to incorporate green practices. Only six projects have received the New York State Green Building Tax Credit. The majority of NYSERDA's other programs provide some technical assistance and some funding, but not enough to completely cover additional costs. As mentioned above, until the green products, technologies, and services are cost competitive with standard options, incentives will be necessary to influence the decision to be green. Incentives include reduced land prices, tax credits, grants, low-interest loans, and bonus zoning as well as inherent health benefits, life-cycle savings, and good public relations.

Products' costs are not their only challenge. Material procurement in New York City can be a challenge, yet one that is slowly diminishing. Most of this nation's non-toxic, recycled content or innovative materials tend to come from the West

[114] The developer of Sunflower Way, Les Bluestone, actually paid less money for higher quality windows compared to standard aluminum ones. Usually, going from a low grade aluminum window to a better one with low-e glass is an increase of about $20 per window and results in a more efficient building, and hence, the building can use a smaller heating system, which costs less money.
[115] Eileen Popkin, Assistant Commissioner of Policy, New York City Department of Housing Preservation and Development, phone interview (4 February 2003).
[116] Popkin.

Coast.[117] It is difficult to find green materials in the New York Region. Aridas has also found the long distance delivery and untested nature of materials deem them even riskier. "However," he explained, "Products are coming to market quicker and are becoming more readily available. It will eventually be easier to find them and source them."

Procurement and cost barriers are especially difficult for green products not affiliated with energy efficiency. More support is necessary to transform the market for these alternative goods and make their prices more competitive. Patty Noonan of New York City Housing Partnership found this to be one of many challenges around the first Sunflower Way development. "It is easier to get energy saving components and harder to get in the other aspects of a green building that lead to health benefits. The payback is harder to quantify." Supportive funding is available for energy efficient measurements, including those from the utilities, NYSERDA, and the Energy Star® program, but not for toxic free, low embodied energy, recycled content material. As Ms. Noonan mentioned, this partly results from the difficulty to quantify and prove the benefits of healthier materials.

Similarly, the lack of support for deconstruction makes it difficult to find recycled and previously used materials in the region. Deconstruction is the systematic dismantling of buildings. Crews enter and take apart a building; from appliances to floorboards to stair treads to roof joists, down to the bricks. The crews separate the recovered materials for reuse in other buildings. There is virtually no deconstruction activity in New York City. However, given the number of demolition and construction projects in the New York Metropolitan area and the size of the population, the potential exists for a legitimate and robust deconstruction and salvaged material market with support to initiate the market.[118]

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[117] Shipping consumes a high quantity of fossil fuel and adds to the embodied energy costs of a product. Therefore, distance should be an important consideration in green material selection.
[118] Scavengers currently recycle much of the city's salvageable building materials, however deconstruction could increase the quantity of these materials and the attractiveness of this market.

In many markets, such as organic foods, a customer is willing to pay more for the benefits of the product. In the New York City real estate market, this is more complex. Customers are already paying more to develop, live, or work in the City compared to the surrounding areas. In regards to luxury apartments, which are less of a priority for the South Bronx, the market is especially tight. There are many options for luxury apartments in NYC; owners can rent these more price competitively if they do not have to recoup additional capital costs associated with green design. For affordable housing, which is more relevant in the South Bronx, the developer will sell all units quickly given the affordable housing shortage. Therefore, the extra amenities of green building do not increase the market advantage of the units.

Although only one interviewee mentioned financing as a barrier, it is a great one. Even in a standard building, financing affordable housing is complex due to the need for more lenders and financiers. Adding green elements that potentially raise development costs further complicates the project. For example, financing Sunflower Way II required four types of subsidies plus loans from various sources. Financiers are most concerned with economic return and financial feasibility, and they assume additional costs associated with green elements affect both of these. Public health benefits do not necessarily make a development more attractive to them, however lifecycle cost savings do. Clear proof of long-term savings is necessary to guarantee the profitability of a project. Without proof of cost savings, the word "green" gives the impression of higher risk and cost, causing lending institutions to shy away. Education and research directed towards these institutions may help change the way they think and do business.[119]

The final barrier associated with current market and development conditions in New York is the jurisdictional nature of the City's labor unions. Green building requires workers to learn new roles. In addition, new green technologies often

[119] Ariella Rosenberg, "Green CDC Initiative Spring Workshop: Green Affordable Housing," (22 May 2002), http://www.newecology.org.

cross over many job definitions, potentially causing conflict between unions. During Wa$teMatch's Deconstruction Workshop in March 2003, participants were weary of union response to new deconstruction trainees taking jobs away from demolition workers.

Many of the risk barriers will diminish as the market transforms. In the meantime, the public sector has and should continue to play a role in its transformation. Government must also offer additional funding to make green developments more financially attractive and competitive.

Leadership

Over twenty percent of responses relate to the need for greater leadership. Similar to information, there are obvious strategies to confront this barrier. The ripple effect of Governor Pataki's leadership in promoting green building demonstrates the power of top-level buy-in and prioritization. The interviewees look to New York City Mayor Bloomberg for that same level of commitment, however most have yet to witness it. This void is especially obvious given the role mayors across the nation' are playing, most notably Seattle's Mayor Greg Nickels and Chicago's Mayor Richard Daly.

Currently there is no city regulation requiring city construction projects to follow DDC's High Performance Building Guidelines. Responders commented on how influential such a regulation for the City would be on the market. In fact, there are no NYC green building programs, including incentives. Although the City is experiencing a fiscal crisis, there are still possible incentives it could offer. For example, the City saves money on the utility bills and maintenance its current green developments incur; however, private developers who spent the extra money for those results do not receive any of these rewards. According to DDC,

> "Efficiencies will never accrue to the client's benefit. Instead, savings are returned to the City's General Fund. This removes a major client incentive to adopting high performance improvements

> and realizing useful operational savings for other agency perceived program needs."[120]

Others cities use different incentives to promote green building, which I will discuss in Chapter 6.

Standards and guidelines, such as LEED™ often help developers once they decide to pursue a green development. Five interviewees felt appropriate standards for building in the unique environment of NYC do not exist. This was the reason behind Battery Park City Authority creating BPC-specific guidelines and the reason the City, the NRDC, and the USGBC are looking into possibilities of a New York specific standard.

Other standards pose problems for promoting green building. A few interviewees believe antiquated zoning and building codes stifle innovation. The Battery Park City Authority and the Albanese Development Corporation faced this issue in designing a blackwater system for *The Solaire.* Hillary Brown mentioned zoning as in issue in the design for the Bronx Criminal Courthouse Complex.

HPD is less concerned with building codes as it is with its annual budget. DDC, in "Implementing High Performance Building Guidelines," explains,

> Current fiscal practices within city government structurally separate capital and operating budgets, prescribing relatively fast pay-backs for efficiency improvements rather than encouraging a life cycle cost approach that would make feasible more extensive performance improvements in new buildings, or deeper retrofits, and yield greater economies across the building life span. It is this fragmentation of operating and capital decision-making that prejudices most design choices towards first cost savings, rather than life-cycle economies.[121]

This particular barrier is less surmountable in the near future. It is possible that successful mitigation of other barriers will essentially ease this challenge. Decentralization of green building programs may also help.

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[120] City of New York, Department of Design and Construction 18.
[121] City of New York, Department of Design and Construction 18.

Local administration of state and city programs can be an important strategy to mitigate some of the existing challenges to green. Patrick Barnhart of the Bronx Overall Economic Development Corporation considers his inability to do this for The Bronx a problem. The borough offices have a better sense of the needs of the neighborhoods and, at times, effective solutions. Barnhart mentioned his desire to use NYSERDA funds to create a boiler replacement program. Given the number of older buildings in The Bronx, he believes that such a program would have a significant impact on energy consumption.[122] He also described potential benefits of a local Green Building Tax Credit that focuses on smaller construction projects.

From the interviews it is apparent there is room for the City to improve its leadership role in promoting green building. Mayors and governors, including Pataki, are precedence for what is possible. Leadership comes in many forms ranging from building code updates to financial incentives to an elected official's declaration. The first step is recognition and support of the green building movement, followed by a multi-faceted approach to further it.

Distribution

The distribution of the risks, costs, and eventual benefits associated with green building continue to complicate support for it. Nine responses mentioned the financial relationship between developers and building owners as well as owners and tenants as illustration of this. These dynamics are especially complex in the development of affordable housing, according to two interviewees. Distribution of available funds also varies by development size and technology. As mentioned above, there tends to be more funding for energy-related strategies compared to other green alternatives.

[122] According to Andrew Padian at Steven Winter Associates, improved superintendent management and better controls would be a more effective strategy to increase the efficiency of older boilers than replacement. "Most buildings in the Bronx are steam heated, and if the boilers were replaced, they would be replaced with the exact same boilers, as the steam technology has not changed at all."

Since green building principles demand a lifecycle analysis of costs, green developers make higher investments up-front for energy and maintenance savings throughout the life of the building. Unless the developer remains the owner of the building, it is the tenants or owners, not the developer, who reap those benefits. Unless the developer is able to sell the development at a higher cost given the added asset of future savings, he or she will not be able to benefit from those savings.

Existing incentives fail to fairly award developers for their forward thinking investments. The current New York State Green Building Tax Credit splits the credit benefit between the developer and the current homeowners. However, only the tenant receives the additional benefit of utility and maintenance savings.

Affordable housing development aggravates this disparity. The benefit of a tax credit is unnecessary to attract occupants; they would live there whether or not the place was green. On the contrary, those benefits are crucial to affordable housing developers. They need the additional money to recover their higher investment costs. Revisiting the window example from HPD, the assistant commissioner for resource development at HPD explains, "While better windows may result in lower energy bills for the tenants, it does not result in savings for the developer."

In addition to the cost differential associated with energy-efficient technologies and healthier materials, affordable housing developments require smarter architects and engineers who can holistically and effectively design the building systems for the special needs of affordable housing. Furthermore, the developer is unable to raise the selling price to compensate for the greater investment as they possibly could for market units. MCII Associates, the developers of Sunflower Way, is one of the few green affordable developers in the City. To persuade other developers to create high performance building necessitates more financial support from the public sector. In the long run, this can potentially save the City money from the reduced servicing and rebuilding costs.

Similar to the developer-owner relationship is the owner-tenant one. If tenants pay for electric utilities, the building owner does not gain from energy efficiency and weatherization investments.[123] The owner, therefore, has less incentive to make these improvements. However, if the owner does cover the utilities, the tenants have less incentive to conserve energy. Often, owners or superintendents overheat buildings in Manhattan and residents consequently open their windows to release the hot air. Again, the owner will fail to fully reap the benefits of her investments.

The distribution of current funding to different project types is also an issue. There is a lack of support for smaller projects. Only projects over 20,000 square feet are eligible for the New York State Green Building Tax Credit. Furthermore, research and publications on green building in NYC tend to focus on the high profile and at times boutique projects, such as 4 Times Square and *The Solaire*. Support and research are just as necessary for small and more ordinary developments as they are for high-profile ones. Furthermore, lessons from small and non-luxury developments can inform a greater quantity of projects.

In sum, current green building programs fail to fully take into account who pays the costs, who receives the benefits, and where incentives will be the most beneficial. Additionally, there is a need to target and support various project types and sizes to ensure that green building does not become solely a luxury item, but rather a healthier reality for all.

Conclusion

Interviewees identified similar barriers to promoting green building, all of which interrelate in various ways. The general consensus around these challenges simplifies the process to mitigate them. The numerous organizations involved with green building in New York have much of the necessary capacity to move past these roadblocks to sustainable development. As I discussed in Chapter 3,

[123] In NYC, building owners pay for heat and hot water 90 percent of the time. Padian.

NYSERDA has the capacity to lead the education, research, and financial aspects of green building on the state level. Non-profits are beginning to deal with the lack of information and training; however this is occurring in a disjointed manner.

NYC has proven its capacity to overcome some barriers with its High Performance Building Program's pilot projects and the green projects in partnership with HPD. However, it appears that the Economic Development Corporation is in the best position to influence future green developments, administer green programs, and act as the central resource for the City. A stronger stance in the Office of the Mayor could be a powerful catalyst for more green projects—one that is obviously missing. The widespread public knowledge, demand, and advocacy for these healthier more efficient buildings by individuals and communities are crucial and possible with the right guidance. Grassroots organizations in the South Bronx and throughout the City can play a larger role at this through community education as well as visioning and planning for a sustainable future.

Chapter 6

Capacity Building Recommendations

Time and experience have the potential to help break down some of the existing barriers to green building, but in the meantime these barriers threaten the pace of the NYC's green building momentum. It is critical to leverage this momentum now to ensure one day all buildings respect the natural environment and the people who live within it. Public support is necessary to achieve this in all communities, especially in historically marginalized ones like the South Bronx.

Over the past few years, cities across the nation have created comprehensive plans to lessen their cities' barriers and increase their capacities to promote green building. Cities such as Austin, Texas, Portland, Oregon, Seattle, Washington, and San Jose, California embarked on processes to hurl green building practices into standard development activities. Components of their programs include

- New legislation
- Design guidelines
- Technical manuals
- Green building teams
- Access to resources
- Training
- Newsletters
- Financial incentives

New York City already has some necessary elements in place to establish its own plan to overcome its green building barriers. The New York City High Performance Building Initiative, the pilot Department of Design and Construction (DDC) projects, and the New York State Energy and Research Development Authority (NYSERDA) resources establish a strong foundation on which the City can begin the process to create a coordinated, comprehensive program. While NYC can learn from the nation's more environmentally progressive municipalities, a NYC program must respect the City's unique history, density, size, and needs as well as its own particular barriers to green building. In consideration of this uniqueness and the imperative to include all communities in its sustainable development endeavor, the City's plan should

- Leverage the City's wealth of community groups that already tackle these barriers;
- Support lower-income and minority neighborhoods such as the South Bronx where residents endure unhealthy living conditions, further aggravated by an unfair share of the City's outdoor air pollution; and
- Ensure all new or rehabilitated developments in these neighborhoods are healthy and durable.

Buildings are part of greater social and ecological systems, which relate to communities, landscapes, watersheds, and airsheds. In creating a New York green building program, it is important to consider these systems and promote not just green building, but green urbanism, as well. "Green urbanism emphasizes the important role of cities and positive urbanism in shaping more sustainable places, communities, and lifestyles."[124] It accounts for the interaction between the natural and built environment to create more environmentally, socially, and economically healthy cities. The above considerations along with the following ten principles provide guidance to foster green urbanism, and therefore more sustainable development in New York.

1. Reduce stormwater runoff
2. Reduce water consumption
3. Conserve energy
4. Control erosion
5. Rebuild disturbed soils
6. Utilize native plants
7. Reduce lawn
8. Protect streams, rivers, and wetlands
9. Support bio-diversity (among residents as well)
10. Utilize local and recycled materials[125]

New York City and The Bronx already have policies and organizations promoting these principles, such as the Bronx River Alliance, Wa$teMatch, and Earth Pledge, to name a few. However, it is more likely government will support and advance these initiatives further with legislation to sanction sustainability principles. The most effective approach to advance sustainable development through green building is a comprehensive policy to promote it.

[124] Timothy Beatley, *Green Urbanism: Learning from European Cities,* (Washington, DC: Island Press, 2000) 5.
[125] G Michael Abbaté, Presentation: "Green Urbanism: Principles of Sustainable Site Planning and Design," US Green Building Council's First Annual International Green Building Conference and Expo (14 November 2003).

Vision, Goals, and Objectives

A successful green building program requires integrated and varied approaches to reducing barriers to green building. According to Rob Bennet, senior manager of the Green Building and Sustainable Technologies and Practices Divisions in Portland's Office of Sustainable Development, "Taking an integrated approach, has helped us to move faster and get quicker market transformation." He equally attributes Portland's success to the inclusion of policy, financial incentives, technical assistance, outreach, and training into the program. Throughout the rest of this chapter, I outline the visions, goals, and objectives of an integrated and comprehensive green building initiative for NYC as well as recommend a series of specific programs to further green building practices in all of the City's neighborhoods.

Vision

To foster long-term social, economic, and environmental sustainability in building and development and make green building practices *the* standard building practice in the City of New York.[126]

New York can be a more sustainable city with a strong economy, clean air, swimmable and fishable rivers, healthy children, diverse wildlife, adequate open space, and ample housing for the population. The City can work towards this vision with a New York City Green Building Initiative.

Goals

The goals of the New York City Green Building Initiative include the following:

- Stimulate market transformation,
- Increase accessibility of green building to all communities,
- Initiate a collaborative environment to engage various stakeholders in promoting sustainable development, and

[126] City of Portland, Oregon, Sustainable Portland Commission, "Green Building Initiative: A Two-Year Action Plan for Promoting Resource-Efficient and Healthy Practices" (December 1999) 5.

- Enhance understanding of both the integration of built and natural systems and human impact on these systems.

A series of specific objectives guide how to proceed to achieve these goals. These objectives are specific to the institutions, capabilities, barriers, and potential of New York City.

Objectives

- Mitigate existing barriers to green building, including those related to information, costs and risks, leadership, and distribution,
- Establish an organizational framework to deliver integrated green building services and resources to city staff, building industry, and the community,
- Continue to make city facilities a model of green building design practice,
- Help minimize on site and off site environmental and infrastructure impacts from development, including degradation of habitat, air, soil, and stormwater through efficient site design and low impact building practices and materials,
- Help reduce CO_2 emissions from building construction, operations, and building related transportation,
- Establish financial and process incentives to accelerate the implementation of sustainable building practices, and
- Create broad awareness of the benefits of green building practices to building industry professionals and consumers.[127]

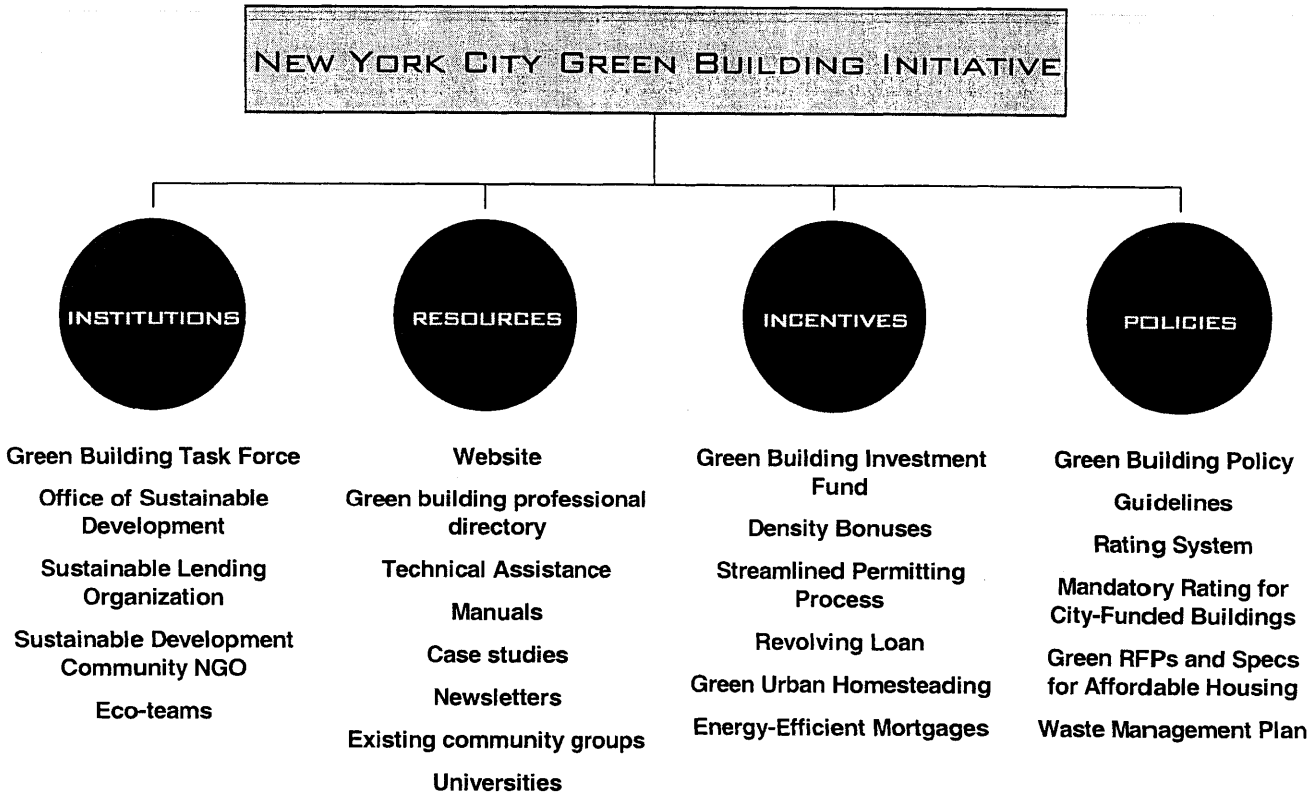
The New York City Green Building Initiative, as a comprehensive action plan, should include various strategies that engage different stakeholders and employ different tools. The initiative should begin with the establishment of green building and sustainable development as mayoral priorities. Once this occurs, the City and a green building task force can develop a green building policy and supporting ordinances based on life-cycle costing and assessment, not on first costs and quick paybacks. The City can continue the facilitation of the DDC pilot programs with the inclusion of more innovative technologies, such as deconstruction, distributed generation, retrofits, and sustainable

[127] City of Portland, Oregon, Sustainable Portland Commission 5.

communities. At the same time, the City can begin to provide green related technical resources and outreach activities, develop green building-based incentives for developers and builders, and foster grassroots level green building activity.

To execute the initiative will take time given the need to secure funding, invest in the necessary resources, analyze research, and set the foundations on which the plan will proceed. Therefore, I recommend a dual track strategy to leverage existing momentum and tend to existing needs while creating a strong, effective, and sustainable program. Chart 6.1 outlines the various components of this plan.

TABLE 6.1



Fast-track actions

Green Building Initiative Task Force

Throughout New York City government, green building champions already interact and discuss green building in various forums, including Earth Pledge Foundation's green roof workshops and the New York City High Performance Building Initiative. To prepare

for a comprehensive city initiative, these champions and other city representatives should form the New York City Green Building Initiative Task Force.[128] Specifically, representation should come from the Departments of City Planning, Design and Construction, Buildings, Housing Preservation and Development, Sanitation, Health and Mental Hygiene, Environmental Protection, Transportation, Fire, Emergency Management, as well as the Offices of Budget Management and Small Business Services, the New York City Economic Development Corporation (EDC), and the Mayor's Office. The creators of the Seattle Sustainable Building program find leveraging these champions to be a critical step to initiating a successful program: "One of the most critical links to success is the availability of sustainable building champions within the departments constructing capital projects. Internal champions can work within the culture and process of the department, track project successes and challenges, and provide internal communications."[129] NYC government has a sufficient number of green building advocates to successfully set the wheels of change in motion.

Office of Sustainable Development

An Office of Sustainable Development inside the Mayor's Office or the Energy Division of EDC would not only demonstrate the city's prioritization of green building, but also its commitment to sustainable development. Both Portland and Seattle governments have such an office. This allows coordination of green building activity with other aspects of sustainable development, including environmentally responsible purchasing, chemical use reduction, protecting and conserving water resources, and energy efficiency. The office should provide support, coordination, and information for all components of the initiative.

Initially, this office would require a small staff to coordinate task force activities and implement other fast-track items. As City Council approves future green building policies, the staff should grow to include green building technical experts. Members of

[128] Although New York green building proponents prefer the term "High Performance Building," the existence of a High Performance Initiative precludes the use of this term for this endeavor.
[129] Lucia Athens and Fulton "Tony" Gale III, "Developing a Public Portfolio of LEED$_{TM}$ Projects: The City of Seattle Experience," 9.

the staff will eventually become members of the New York City Green Building Initiative's Steering Committee.

Website

The City's green building initiative website should be portal to organize and disseminate available resources from the various agencies and organizations to a greater audience. The website should post future events, policies, and press releases. It should also advertise upcoming training sessions, current funding opportunities, case studies, and other helpful resources. The City of Austin, Texas, publicizes their residential, commercial, municipal, and multifamily guidelines on their website. It provides electronic versions of its *Sustainable Buildings Sourcebook*, Green Home Buyers Checklist, and links to partner agencies and organizations, as well.[130] Portland's G-Rated Green Building Program has a comprehensive and up-to-date website that enhances information distribution. In addition to the above mentioned features, the G/Rated website includes electronic newsletters, all press releases and policies relating to green building in Portland, emerging technologies, sample green Requests for Proposals (RFP) and building specifications, and in-depth case studies.[131]

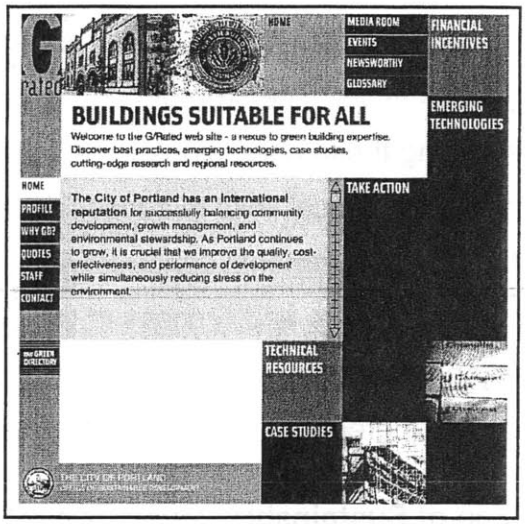


Figure 12: Portland's G/Rated Website

New York City Green Building Initiative

The foundations set by the Green Building Initiative Task Force should give rise to the New York City Green Building Initiative, to be launched in the near future.

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[130] Austin Green Builders Program, http://www.ci.austin.tx.us/greenbuilder.
[131] City of Portland, Office of Sustainable Development, G/Rated Program, http://www.green-rated.org/g_rated/grated.html.

Green Building Policy

The experience of DDC's High Performance Building Program has set the stage for a Green Building Policy mandating compliance of green building guidelines for all city buildings. The City of New York should incorporate green building principles and practices into the design, construction, and operations of all city facilities, city-funded projects, and infrastructure projects to the fullest extent possible. This includes new buildings, major retrofits, interior improvements, operations and maintenance, and deconstruction. As part of this policy, NYC should adopt a green building rating system similar to LEED™ and DDC's High Performance Building Guidelines. The policy should mandate that each city building receive a minimum green building rating, further described below. This mandate will ensure that green building practices spread even further into all five boroughs and more of the City's neighborhoods.

The policy should also call for the City to provide leadership and guidance to encourage the application of green building practices in private sector development. DDC, NYSERDA, and the High Performance Building Initiative research can help create ordinances and programs to support this policy. These ordinances should cover all aspects of green building, including public infrastructure, energy, water, and sanitation.

New York City Green Building Rating System

According to John Amatruda of Steven Winter Associates, there are two paths a government can take to create guidelines to promote green building: a LEED™ –type rating system or guidelines (Portland, Seattle, San Jose, and Austin) or tax credit regulations (New York State and Maryland)[132]. New York City already benefits from the state's tax credit, but as this study shows, this approach is not enough. The addition of a rating system or guidelines on the city level is necessary to guide and prescribe buildings to be more sustainable.

[132] John Amatruda, Senior Architect and Associate, Presentation: "Creating Green Building Guidelines and Standards: Key Considerations for Public and Private Entities" US Green Building Council's First Annual International Green Building Conference and Expo (14 November 2003).

NYC has the advantage of other cities' experiences creating their own version of LEED™ and the City's own experience with DDC's High Performance Building Guidelines and those of the Battery Park City Authority (BPCA). The City should either expand DDC's guidelines or create its own LEED-based one that accounts for New York's high density and other unique characteristics. Different versions are necessary to cover residential, commercial, municipal, multi-family, affordable housing, operations and maintenance, and renovation projects. Similar to LEED™ the number of standards a development meets will earn the building a corresponding rating. Unlike LEED™ however, the rating level will also depend on the "weight" or importance of the integrated elements.[133]

It is important to note, as one presenter at the US Green Building Council's Conference in November 2002 reminded the audience, "Although we can't yet consider a Certified, Silver, or even Gold LEED™ [rated] building to be truly sustainable, they begin to create a path to a sustainable future."[134] To begin the process of change, help to transform the market, and yield cost savings to tax payers through the long-term reduced operating costs of their facilities, all new city construction or major renovation projects should achieve a certain level of "greenness." Research, such as City Council's proposed cost/benefit analysis, will determine what rating of "greenness" is appropriate for the City at this time. As the market transforms, technology improves, and materials become more accessible, the required level should increase.

The guidelines are voluntary for non-city developments; however, the City should link the size of financial incentives for green buildings with their achieved rating levels. It should craft ordinances and provide programs that render the guidelines an attractive option for developers. The City does not have the jurisdiction to create its own tax credit program[135], but other mechanisms exist to help motivate use of the guidelines. Along with financial incentives, the inherent benefits these guidelines provide, such as process and organizational support, will increase their attractiveness.

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[133] Russell Unger, Attorney, New York City Council, phone interview (28 February 2003).
[134] Peter Dbrovolny, Presentation: "Sustainable Building Isn't Just about Buildings," US Green Building Council's First Annual International Green Building Conference and Expo (14 November 2003).
[135] Only the state can create an income tax program. The city only has control over property taxes.

Green Request for Proposals and Building Specifications for Affordable Housing

Studies show that standard new affordable housing in NYC is extremely inefficient, typically using twice the amount of energy of older buildings.[136] Residents, the City, and the environment would benefit from more efficient, higher quality developments. An ordinance of the New York City Green Building Initiative should require all housing developments that pass through the Department of Housing Preservation and Development (HPD) to follow green residential, multi-family, or affordable housing-specific guidelines. HPD should also green all their requests for proposals (RFPs) and building specifications. In the development process, this early commitment to sustainability will minimize the costs of green elements by effectively integrating them into building design. In addition, HPD should post a sample green affordable housing RFP and green building specs on the initiative's website to assist other developers of affordable housing developments.

The City of Portland has found green guidelines for affordable housing to be a successful component of their initiative. Portland Development Commission (PDC) integrates green building standards and performance criteria in its RFPs based on the city's "Design and Construction Guidelines for Affordable Housing." A partnership between PDC, the Portland's Green Building Initiative, city bureaus, and non-profit organizations created these guidelines to "establish goals and standards to increase the environmental performance and durability for all affordable housing in Portland. The guidelines outline various cost effective options that improve upon current codes and standards."[137] There are a total of 36 threshold criteria that have little to no cost premium, which developers must incorporate into their proposals in order for the PDC to consider them. Like New York City, Portland suffers from a severe housing shortage

[136] Padian.
[137] City of Portland, Oregon, Office of Sustainable Development, "Greening Portland's Affordable Housing" (9 November 2000) 3.

and housing affordability crisis. The City felt that greening affordable housing was not just good business, but a social justice issue, as well.[138]

Green Building Investment Fund

NYC's Office of Sustainable Development should create a Green Building Investment Fund to provide small grants for emerging technologies and affordable housing. Portland established such a fund and has recently allocated a second round due to the success of the program. Awardees have integrated innovative green elements such as solar hot water heating and green roof monitoring into their developments. According to the Office of Sustainable Development, "The program is helping stimulate new technologies and valuable research related to indoor air quality monitoring, stormwater management, on-site rainwater harvesting, energy conservation, natural ventilation, cooling and natural building techniques."[139] The fund has also issued grants totaling $120,000 for green building innovations in two new affordable housing.

To further existing and emerging clean energy technologies, the City should partner with the New York Power Authority (NYPA) and NYSERDA to promote city clean energy and distributed generation initiatives. Investments into these green building components can secure a constant supply of energy even on extremely hot days when the electricity grid tends to overload. Additionally, it will decrease the need to develop new power generators, which already produce fear in community residents.

Density Bonuses

New York City has extensive experience with incentive zoning, also know as density bonuses. New York City's 1961 zoning ordinance allowed developers to increase floor area ratio (FAR) above zoning standards with the inclusion of public spaces. As Jerald Kayden's *Privately Owned Public Spaces* underlines, this ordinance was mostly a failure. Many developers took advantage of the program to increase their buildings' FAR while developing low quality, if any, public space. However, Kayden's research

[138] Rob Bennet, Senior Manager, Green Building and Sustainable Technologies and Practices Divisions, City of Portland, Oregon, Office of Sustainable Development (1 May 2003).
[139] City of Portland, Department of Sustainable Development, Press Release March 2002, "Portland Issues 15 Green Building Grants."

found that the 1974 amendment to the zoning ordinance requiring developers to follow prescriptive guidelines to receive the bonus resulted in better quality spaces.

The City should apply the public space lessons to green building. The City Planning Commission and the Department of Buildings should allow developers to reasonably increase FAR if they follow NYC's green building guidelines and achieve a certain rating level. The FAR bonus would allow developers to recover initial green capital costs through greater rentable space. The size of the bonus would depend on the building's area and its level of "greenness" as determined by the City. It is crucial that the size of the bonus is not arbitrary but rather reflective of the additional costs and risks associated with the green technologies.

Streamlined Permitting Process

The Department of Buildings and the Department of City Planning should work with the Department of Sustainable Development to streamline the City's permitting and land use review processes. Differentiating between the process for buildings that follow the green guidelines and those that do not is a key strategy for market transformation. It would make green developments a comparatively more attractive option based on the time and money saved through an expedited process. Currently, the Uniform Land Use Review Procedure (ULURP) takes as long as six months, though, the Mayor can certify a special permit to reduce that time to approximately 50 days. New York City has expedited its construction permitting process by offering an electronic service, however a reduced time or fee would create another incentive for green building.

Fee structures

Modification of the state and city's fee structure could help motivate more innovation and experimentation. For example, the City should charge less for sewer connections to developments with blackwater systems since the development relies less on the City's sewer infrastructure. Electricity connection charge is another example of a necessary fee structure change. A building should be able to connect to the energy grid at a reduced or zero charge if it is generates its own electricity and does not regularly

rely on the grid. The current pricing structure stifles innovation, such as co-generation. In a market driven economy, the economy will drive. Therefore, the structure should allow innovation to be profitable and innovators to be rewarded.

Revolving Loan

A revolving loan fund is a city-administered loan that allocates money to a particular project and uses the repayment and interest to subsequently fund other projects. Boston, Massachusetts, for example, uses the revolving loan mechanism to finance brownfield redevelopments. New York City should acquire initial seed funding to establish a green building revolving loan fund to offer financing for smaller green building projects. Eligible projects should follow the City's green building guidelines.

Green Urban Homesteading

HPD and the Office of Sustainable Development should research the feasibility of a green urban homesteading program and consider a pilot project that would expand on the City's existing urban homesteading experience. Urban homesteading is the process where an individual, family, or community renovates an abandoned building with their own money and time and the City subsequently gives them title to the building for a nominal fee. New York City has plenty of vacant buildings that either tax delinquent owners or the City owns, especially in the South Bronx, where homesteading can take place. The green urban homesteading program is another strategy HPD could employ to provide more housing options, promulgate green building practices, and offer green construction training for residents. This can help increase the number of trained and even licensed green building construction workers in the City, as well. The program would also help create a greater stake and sense of ownership for people in the neighborhood.

According the *Village Voice,* New York has experience with homesteading, including a recent case where HPD gave license to eleven homesteaders in the Lower East Side in Manhattan. However, HPD has a combative relationship with the Inner City Press Homesteaders, a grassroots group of mostly Latino families in the South Bronx and

East Harlem. The Urban Homesteading Assistance Board (UHAB) is a local nonprofit group in NYC with 29-years of experience that helps tenants take over and manage buildings. The organization helps renovators secure loans and bring the buildings up to code. UHAB also ensures these new co-op members qualify for affordable housing and do not sell the renovated units for a profit.

Precedence exists for green homesteading. The UHAB received federal funding to integrate healthy materials and practices into the rehabilitation of buildings.[140] Understanding the impacts of lead, mold, and pests in older buildings, UHAB promotes the uses of non-toxic pest control, asthma prevention organizing, and using green building materials in its co-op developments. UHAB is expanding on that experience. Leveraging a grant from the Department of Housing and Urban Development (HUD), UHAB is creating a "Healthy Homes Toolkit" for homesteaders, "Which will collect UHAB's healthy-home specifications and standards in one place, simplifying a complex development process."[141] UHAB should be a key partner in expanding and legitimizing green urban homesteading in NYC.

Waste Management

New York City's waste management is a complex, political, and controversial topic—however, the City cannot shy away from it. The closure of Fresh Kills Landfill in Staten Island, the great expense of exporting wastes, and the significant burden of waste facilities on lower-income residents intensify the urgency for action. To further green building practices, in particular the use of recycled-content materials and deconstruction methods, the City should initiate a new recycling program as well as incorporate construction and demolition recycling into its Solid Waste Management Plan.

The Office of Sustainable Development should include a recycling and deconstruction focus and provide fact sheets, case studies, processor lists, and reports on C&D material reuse and recycling to the construction and demolition industry and other interested parties. The Office should also initiate a deconstruction pilot program for the

[140] The Urban Homesteading Assistance Board, "News from the Urban Homesteading Assistance Board UHAB Update" (January 2003), http://www.uhab.org/PressReleases/uhabupdate2.htm - 20.
[141] The Urban Homesteading Assistance Board.

City. Eventually lessons from these pilot projects could inform a deconstruction policy mandating all city-funded demolition projects to include deconstruction and recycling of materials. City leadership on deconstruction will help create a market for salvaged and recycled materials plus train workers—including labor union members—how to properly deconstruct a building.

Once again, the City should collaborate with community organizations to create its recycling or deconstruction programs. Boroughs Allied for Recycling and Garbage Equity (B.A.R.G.E.) is a NYC grassroots coalition that intends "to force the city and state administrations to undertake the kind of comprehensive planning process that is needed if the City is ever going to achieve a fairer, safer, cleaner and cheaper system of recycling and waste management."[142] This organization should be part of a task force to create such programs.

Deconstruction not only furthers the recycling, waste management, and environmental goals, it also provides an opportunity for job training and economic development in lower-income neighborhoods. The USEPA helps to fund programs that integrate training and deconstruction. For example, a $50,000 grant from the US EPA helped fund a deconstruction job training program to train 10 low-income residents of the Ivy City section of Washington, DC to deconstruct buildings. The grantees subsequently started their own business and have deconstructed a number of homes in Washington, DC and Baltimore, Maryland.[143] Another grant helped the University of Florida's Center for Construction and Environment develop technical assistance for deconstructing and reusing building materials including a HOPE VI Project in Miami, Florida. A similar grant could help the Office of Sustainable Development, The Department of Sanitation, and Wa$teMatch initiate training and technical assistance programs that would both further NYC's green building movement and help improve the quality of life for residents who have no choice but to live near the City's waste facilities.

Federal and state funding opportunities

[142] John McCrory, "New Coalitions Offer Hope for United Action: Boroughs Allied for Recycling and Garbage Equity," *Big Apple Garbage Sentinel,* (23 September 1999), Chapter 9.
[143] US Environmental Protection Agency, C&D Waste, http://www.epa.gov/epaoswer/non-hw/debris/programs.htm

As the above deconstruction cases exemplify, the City can receive seed capital to initiate projects to further green building goals. The City should leverage existing federal and state economic development and environmental funds to the maximum extent possible. For example, federal funds can help capitalize a revolving loan fund or other program with grants from the US Economic Development Administration, which offers municipalities Economic Adjustment Assistance Grants. Similarly, the US EPA can provide seed money for a deconstruction training program. Tying green building to other federal priorities, such as brownfields redevelopment and economic development, may help procure support, as well. The City should also encourage the state to increase its green building funding and expand the New York State Green Building Tax Credit.

Education and Training Programs

Each week in NYC there are numerous green building-related workshops, discussions, and conferences. The City's green building initiative should partner with the organizations hosting these events to institutionalize educational efforts, including the Environmental Business Association (EBA), the Natural Resources Defense Council (NRDC), and GreenHome NYC. In addition to these events, the City should offer training seminars for various building professionals as well as city employees and community groups. Through Austin's Green Builder Program, for example, the City offers monthly training seminars for building professionals on a wide variety of topics. They also co-sponsor green building tours that showcase successful projects in the area.

Behavior change rarely occurs as a result of simply providing information. Therefore, community-based social marketing is an important tool the City can employ to further green building practices among residents and building owners. Community-based social marketing is a campaign to influence residents to make small, practical changes to make their behaviors more sustainable. "This kind of marketing emphasizes direct, personal contact among community members and the removal of barriers since research suggests that such approaches are often most likely to bring about [behavioral

change]"[144]. The Office of Sustainable Development should use the community-based social marketing approach to demonstrate to residents how their behaviors could improve. For example, the office should provide information about the City's green building website through postcards sent with parking permits, new driver's licenses, or sanitation notices or with a catchy advertisement campaign on subway cars. It is important that these campaigns "re-brand" the words green and environment. The "Going for Green" Environmental Campaigns website suggests, "Language and images need to be found which establish sustainable development as something commonly desirable and a goal with which everyone wishes to be identified and to play their part in achieving."[145] The campaign must inform residents that "green" does not connote a "tree-hugging" or more expensive development practices, simply higher performance developments with lower ecological footprints.

Universities

Universities across the country are leading green trends in their communities. For example, both Harvard University and Massachusetts Institute of Technology in Cambridge, Massachusetts have incorporated green building policies into their development practices and serve as models for city projects. The schools also offer engineering and design courses to increase the number of trained professionals capable of designing green buildings.

New York City has 34 universities and colleges, which house and employ thousands of people.[146] A partnership with area universities to implement green design, pursue research on its costs and benefits, and provide courses to teach future professionals would have a significant impact. Besides increasing the number of green buildings in the City, such a partnership would increase the demand for green building materials and professionals and expose more people to its possibilities. Universities should act as testing grounds for cutting edge, experimental technologies to prove their effectiveness and weaknesses. This research provides educational opportunities for both students

[144] Natural Resources Canada, "An Overview of Community-Based Social Marketing, " http://oee.nrcan.gc.ca/idling/what_you_can_do/
[145] Going for Green, http://www.goingforgreen.org.uk/.
[146] NY.com, http://www.ny.com/academia/colleges.html.

and current professionals. Universities should continue their collaboration with community groups to increase available research and data on all aspects of green building. They should also increase the number of courses that address green design and sustainable community planning at their institutions to prepare the next generation of building professionals to respond to or lead the market transformation.

On-going research

The New York City Green Building Initiative should mature and change along with the green building movement. To do so requires on-going research into cost, health benefits, new materials and technologies, and building performance overtime. Data collection and tracking tools should be an integral part of the green building program. All buildings complying with the guidelines should have a system to track initial, utility, operations, and replacement costs of the buildings and impacts on city infrastructure. Tracking of tenant health improvements, medical costs, and similar indicators should be part of the data collection, as well. This research will allow the Office of Sustainable Development to assess and modify the Green Building Policy if necessary.

New Institutions

In partnership with the City, private not-for-profit organizations should help facilitate the New York City Green Building Initiative in reaching all NYC communities. As described in chapter 3, New York City has many groups trying to further green building. However, there is a need for new organizations to fill in capacity gaps. These include sustainable development community organizations and community lending banks. Various models exist for such organizations around the country at different scales.

New York City needs a sustainable development organization, or possibly one for each borough, that brings the available green building resources and training to various community groups. New Ecology, Inc. (NEI) in Cambridge, Massachusetts provides an effective model of this. NEI works with community organizations in the Boston Metropolitan area to help them further sustainability in their neighborhoods, whether by creating an "Urban Village," redeveloping brownfields, or creating recycling programs.

In addition, NEI collaborates with the Tellus Institute, a policy research organization, and the Massachusetts Association of Community Development Corporations (MACDC) to create the Green CDC Initiative. This initiative provides green building workshops, newsletters, and consulting geared towards community development corporations (CDC) and their affordable housing projects. In New York, a few of the existing non-profit organizations have the potential to take on this type of initiative, namely the Community Environmental Center. Currently, however, this work is outside their scope. The prominence of CDCs in New York City necessitates the leverage of the development activity and organizational capacity these organizations have to promote green building and the City's initiative.

A community development bank would also further the New York City's green building initiative. Such a bank would support smaller and community-oriented green building developments as well as other sustainable development initiatives, including waterfront restoration, community training facilities, and green small businesses. Shore Bank Pacific is a valuable model of the potential of a NYC community development bank. Shore Bank is a federally regulated, FDIC insured, bank that supports the conservation economy of the Pacific Northwest.[147] It directs its lending activity to support restoration of the environment and sustainable economic growth. It provides loans to small businesses and developers that have conservation-based development plans. It also helps finance low- to moderate-income housing development, community services, job creation, and projects that result in resource efficiency and waste reduction. A similar bank in NYC could provide loans to support green building developments and projects that support them.

Recommendations to Lending Institutions

Existing lending institutions can also play a significant role in advancing New York's City green building movement. These institutions can partner with the City as part of the initiative to provide low-interest loans and gap financing for green investments to buildings.

[147] Steve Gutmann, Laurie Landeros, and Kathleen Sayce, "Conservation-Based Lending at a Community Development Bank," *Sustainable Architecture White Pages* (New York: Earth Pledge Foundation, 2000).

Given the high quality, durability, and future savings potential of green buildings, lending institutions should provide special mortgages for buildings reaching a green rating level that the initiative establishes. Precedence for this sort of mortgage exists. Fannie Mae provides energy-efficient mortgages in partnership with local banks and city or state initiatives in other parts of the country. For example, in Portland, Oregon, Fannie Mae offers the Flexible Home Performance Power Mortgage and the Community Home Performance Power Mortgage. The Home Performance Power Mortgage recognizes the cost savings of living in or owning a resource efficient, high quality building. (An Earth Advantage™ certified home in this case) The program allows homebuyers to capitalize on these savings by qualifying for a higher loan amount than they would if buying a less efficient housing unit. Similarly, the Community Home Performance Power program targets low-and moderate-income homebuyers, earning at or below 100 percent of the area median income, and helps them purchase Earth Advantage™ homes.

Recommendations to The Bronx

According to Portland's Green Building Initiative Commission, "The key is to make green building accessible, by making it affordable and encouraging it to become standard practice." It is equally important to include the needs and capabilities of local governments and community groups in this effort.

The Bronx Overall Economic Development Corporation should expand its role in promoting green building. It should make the cultivation of green building related industries in the Bronx a greater priority. BOEDC and the Bronx Borough President have already shown interest in this endeavor, however it is time to take that interest further. The Bronx has the infrastructure to incubate green industries including green technology, materials with recycled content, and space for separation and sale of recycled materials. These offices should also support and initiate programs to increase vocational training relating to green technologies and construction that will put residents at an advantage in the emerging market.

Community members should become more involved with green building activities and sustainable development in general. In addition to enrolling in future training programs, strong community organizations, including churches, parent associations, and environmental groups, should initiate Eco-teams in their areas. The Global Action Plan's (GAP) Eco-team program is a way to involve communities in increasing the sustainability of their lifestyles. GAP staff organizes and facilitates regular meetings where household members meet together to understand and modify their environmental consumption patterns. The Bronx can leverage the community organization that occurs around issues such as truck idling, waste incinerators, and electricity generators to find individuals interested in promoting positive changes in their communities and participating in the program. Currently the Eco-team program is not geared for urban, lower-income communities. Therefore a local group should partner with GAP to modify the program in a meaningful way for Bronx residents.

Conclusion:

"The market has begun its transformation," claims Rob Watson of the NRDC regarding the nation's green building movement, and "Success is breeding success,"[148] Three percent of all new commercial buildings are using the LEED™ or LEED™-type rating systems. Numerous others developments are implementing green practices, as well.[149]

New York City is part of this movement and has proven to have the capacity to promote green building to an extent. However existing barriers to green building throughout the City's communities threaten the pace and the progress of this industry-led movement. A city-level, comprehensive initiative that includes all communities, leverages its large-scale grassroots organizations, and breaks-down barriers to green building has the potential to catapult NYC towards a more sustainable future. New York's unique density, size, history, and renown render this progress more challenging and at the

[148] Rob Watson, Rob Watson, Director of International Programs, Natural Resource Defense Council, phone interview (22 Mar. 2003).
[149] City of Portland, Office of Sustainable Development, "Rethinking Development: Portland's Strategic Investment in Green Building" (March 2003).

same time more rewarding. A successful green building program in New York will be an important model nationally due to city's special characteristics.

The advancement of green building in the South Bronx, given its own history and challenges, is a model of community restoration, environmental justice, and commitment to a healthier future. The case of green building in the South Bronx is part of a greater story of the strength and capabilities of grassroots revitalization efforts. It demonstrates the power of community participation and multi-sector partnerships. Most importantly, however, it highlights the need for greater public support of communities torn apart to some degree by transportation and housing programs, zoning, and ineffective environmental policies.

Society is in the beginning phases of a new era of policy that learns from past mistakes and attempts to integrate the needs of communities with economic and environmental health. It promotes localized and collaborative processes to achieve more sustainable development. It believes in environmental justice, industrial ecology, and community participation. Green building is a part of this new era and its policies and programs in New York have already shown the ability to further sustainability initiatives. A New York Green Building Initiative would build on and strengthen this capacity and provide a model for other cities, demonstrating how the world's greatest and most dynamic city greens each of its communities. New York City and its communities are already moving towards the sustainable development destination; fostering green building practices is an essential part of the journey.

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